

# COMPUTERWORLD

## Microsoft, IBM strain to deliver wares

String of delays stalls Windows 3.1

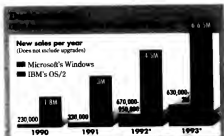
BY JAMES DALY  
CW STAFF

What's holding up the arrival of Windows 3.1? Users planning to attend the upcoming third annual Windows OS/2 Conference in San Jose, Calif., are anxious to find out but are getting few acceptable answers.

What Microsoft Corp. officials originally described as a compilation of minor fixes — a simple fine-tuning of the popular Windows 3.0 graphical environment — has instead turned into a steady string of delays and excuses.

"There are not a lot of cosmetic features that are going to blow people away," said John Stungl, a Windows 3.1 beta-test user and office automation manager at Pacific First Bank in Seattle. Yet so far, Microsoft developers have worked their way through four beta-test releases, cramming in new features and improving clumsy old ones.

The safe money is betting



Source: Gartner Group, Inc.

CW Chart: Marie Wason

that Version 3.1 will be unveiled at Comdex Spring '92/Windows World in early April, almost a year after Microsoft Chairman Bill Gates announced the first of at least three delivery dates that were later postponed.

The latest deferral came at Comdex/Fall '91 in October, when Microsoft shelved an avowed end-of-the-year ship date, promising instead to have the elusive update available in the first quarter of this year.

"It'd like to see a final version that provides all the functionality

they've promised, but I don't expect to anytime soon," said beta-tester Dick Nelson, vice president at New York Life Insurance Co. in New York. Nelson, who recently completed equipping the firm's 10,000 agents with Version 3.0, said the delays will cause the company to stick with Version 3.0 because he does not want to "turn around and start training [employees] on something new."

The unexplained delay has put a crimp in some users' information. Continued on page 89

Big Blue struggles but hits OS/2 target

BY ROSEMARY HAMILTON  
CW STAFF

With only hours to spare, IBM met a crucial deadline last week and shipped a limited-availability version of OS/2 Release 2.0.

However, some customers were concerned that development tools from IBM were not yet updated to work with the limited-availability release, according to discussions on a CompuServe forum last week. An IBM spokesman said there is typically a lag time between release of the operating system and release of development tools. He said the tools should be updated within a few weeks.

"It's sufficient for us to meet our commitments to our users who were expecting this," said George Oliver, manager of information delivery technology at the Royal Bank of Canada in Toronto.

The release, promised in April 1991 and again in Continued on page 89

## HP station slips under \$5,000

BY MARYFRAN JOHNSON  
CW STAFF

CHELMSFORD, Mass. — Hewlett-Packard Co. will drop a bombshell on the low end of the Unix workstation market next week with the surprise unveiling of a \$4,990 desktop workstation. In a hastily arranged conference call with analysts last week, an HP executive revised earlier price ranges for the new low-end models of the HP Apollo 9000 Series 700 workstations.

"They're really going to stick it to IBM on the pricing side," said one of the analysts briefed by Gary Eichhorn, a general manager at HP's workstation business unit here.

### Price expectations

IBM is expected to announce its new low-end RESC System/6000 during the next few weeks, but few industry observers expect it to be priced much below \$7,000. Currently, IBM's lowest priced RS/6000 is the \$14,000 Model 320H.

The new low-end Model 705, based on HP's Precision Architecture reduced instruction set computing chip, is a gray-scale configuration performing at roughly 35 Specmarks and equipped with space for additional disk drives.

Continued on page 89

## Host plans reveal wider options

BY JOHANNA AMBROSIO  
CW STAFF

As large information systems shops investigate downsizing, they are finding that answers run in many shades of gray.

All but one of 10 users polled last week on mainframe purchasing plans said they will continue to add high-end horsepower — including upgraded CPUs and more memory and storage devices — during the next 12 to 18 months.

At the same time, however, a majority of those interviewed said they will continue to explore options off the mainframe, including open systems and local-area network servers as well as

**"You can't dismiss overnight what it took 25 years to build."**

Elaine E. Bond  
Senior Vice President,  
Corporate Systems Group  
Chase Manhattan Corp.



Photo: Thomas Hurney/Creative Liaison

less expensive alternatives such as open equipment.

In short, users, analysts and vendors predicted the following trends in 1992 and beyond:

- Continued enhancement, particularly in terms of performance, of the installed base.
- Purchasing one large CPU rather than several small mainframes to handle several tasks.
- Changes in the way mainframes are used.

Some users are skeptical

about the speculated demise of the mainframe. "If the mainframe is dead, no one's bothered to tell me," said David A. Moore, senior vice president of Mellon Bank Corp. in Pittsburgh.

Mellon installed an IBM Enterprise System/9000 Model 900 — the largest general computer IBM offers — in November 1991 and predicted an 18% growth rate in mainframe CPU hours for 1992. Still, he said,

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**Multimedia workstations** on the way from Sun. Page 4.

**Executive Report** — Few firms put information technology in a leading role in quality improvement. Page 57.



- Holy cow! Hardware revenue expected to grow 4% in 1992. Page 88.
- Will ACE, OS/2 and SAA wither? One research firm thinks so. Page 88.

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## Quotable

"If the mainframe is dead, no one's bothered to tell me."

DAVID A. MOORE  
WELDON BANK

On the much-discussed demise of the mainframe.  
See story page 1.

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# EXECUTIVE BRIEFING

■ IBM meets a crucial deadline and ships a preliminary version of OS/2 Release 2.0. IBM had plenty riding on this shipment because of the potential risk to its credibility, analysts say. The release had been promised in April, and then again in October, for delivery by the end of 1991. The final version of Release 2.0 will debut in March. Page 1.

■ U.S. companies jumping on the quality bandwagon are far more likely to concentrate their efforts on manufacturing or customer service than on information systems. But experts say real quality advances are more probable when companies improve data flow first. Page 57.

■ Good news for the computer industry. The U.S. Department of Commerce expects that 1992 sales of computer hardware will produce the first real growth in four years. Standard & Poor's says it expects industry profits to jump 12% this year. Page 68.

■ Modular software may find a home on PCs. Analysts say applications are an ideal fit for Windows-based software that comes with segments that run alone or can be hooked into other applications will be popular. Page 37.

■ Grace Murray Hopper, one of the first computer programmers and the mother of Cobol, dies of natural causes on New Year's Day. Page 14.

■ Potential users wait and watch as Switched Multimegabit Data Service comes out of the phone companies. Before committing to using it, telecommunications managers want to know how it differs from options such as frame relay. Page 49.

■ Verimatrix, an AB Volvo subsidiary, has plans to extend Memo, its host-based integrated office system, into the local-area network environment through an agreement with Action Technologies, Inc. Page 4.

■ The distributed network management system announced by Novell last month seems to have some of the features users want. However, it may also be a burden because it is based on the less-than-popular OS/2. Page 49.

■ End users are switching their mainframe security software from Computer Associates' ACF2 and Top Secret to IBM's RACF in part because of greater confidence in IBM's ability to deliver a security solution for distributed computing. Page 87.

■ On site this week: The Santa Fe Railroad has a wall-size display fed by data drawn from a mainframe and personal computers to monitor the status of trains nationwide. Page 29. A new testing and certification system is on tap at the National Association of Securities Dealers. Page 29. The results were better than anyone expected when seed developer Northrup King downsized to an IBM Application System/400 and integrated its applications under a common menu system. Page 31. Phase 1 of Hyundai Motor America's move to laptop computers brought lighter work loads for administrative staffs, less travel and reduced phone bills because of better use of electronic mail. Phase 2 is now under way. Page 37. Central Life Assurance cast an eye to the future when it moved to an imaging system. Page 41.

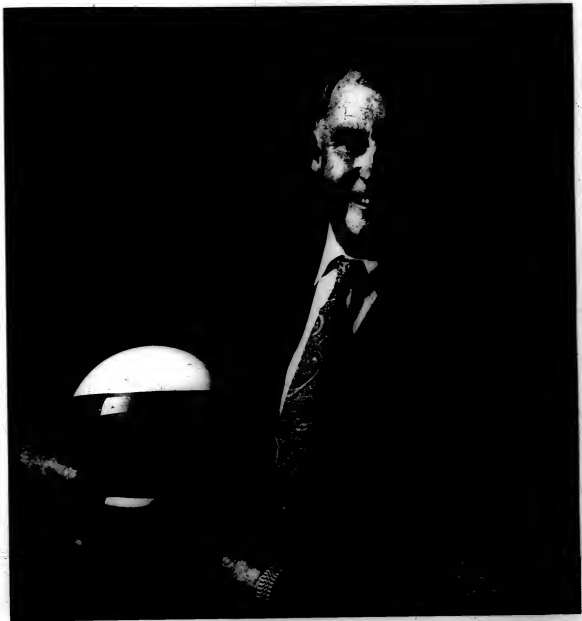
■ Tandem Computers has established a strategy for client/server computing with an eye on more general applications. Page 25.

■ Blowing a New Year's resolution in 1992 could be suicidal, says an information systems consultant. He calls 1992 the year in which managers must commit to signing their organizations with business goals. Page 55.

■ Getting your MBA does not automatically translate into higher salaries during tough economic times. Page 74.

## The 5th Wave





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# Volvo sub takes Action vs. Officevision

BY ELISABETH HORWITZ  
CW STAFF

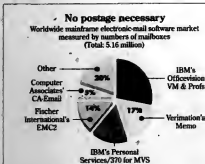
Having quietly won several rounds against IBM's office mail systems in the U.S., a Scandinavian office systems vendor is now preparing an assault on IBM's Officevision on both the host and local-area network sides. The potential for users to realize considerable cost savings appears to be a key strategic weapon for Verimemo, Inc.

An AB Volvo subsidiary, Verimemo is expected next week to announce plans to extend its host-based integrated office system, Memo, beyond IBM mainframes into the LAN environment through a joint development agreement with Action Technologies, Inc.

The partners plan over the longer term to integrate Memo with Action's LAN-based workflow coordination technologies to provide automatic routing of documents across LAN-based and host-based systems corporate-wide, according to Adam Szczygielski, president of Verimemo's U.S. subsidiary.

Users expressed cautious enthusiasm about Verimemo's new alliance with Action. A LAN version of Memo would solve Halliburton Co.'s dilemma of wanting to bring electronic mail to its LAN users without having to maintain two separate E-mail systems — one for LANs and one for hosts, said George MacLewton, manager of information technology at the Dallas-based energy firm.

"Intelligent routing of forms will become important for 1992 and beyond, as companies get settled with their LAN E-mail systems and look for applications beyond that," said Ann Palermo, director of office systems research at International Data Corp. (IDC).



Source: International Data Corp.

The company needs to extend Memo to LAN users if it wants to capture a bigger piece of the U.S. integrated office systems market, which together with groupware is projected to grow from about \$41 million in 1990 to \$320 million in 1995, according to IDC.

While Verimemo recently announced gateways to LAN E-mail systems, the deal with Action targets users that only want one E-mail and automated document distribution system running across their host and LAN

installations.

While Verimemo's U.S. installed base is still comparatively small (3% of 2.77 million domestic mailboxes), the company has recently won some major contracts here, signing up the likes of AMR Corp., McDonald's Corp., Diebold, Inc. and Hall-

iburton's 3090 mainframe is so low that the firm's information systems department does not charge its 12,000 to 15,000 E-mail "customers" for unlimited usage, MacLewton noted.

Halliburton chose Memo over IBM's Officevision. Profs and IBM's Services E-mail products about four years ago, finding that the other products "were not user-friendly and [were] expensive to run," MacLewton said.

Diebold chose Memo over IBM's Officevision. Profs and IBM's Services packages about six months ago, primarily because of Memo's intelligent forms capability, according to Carl Hoeller, manager of software services at the Ohio bank-teller equipment manufacturer.

Host-based office system vendors such as Verimemo, Computer Associates International, Inc. and Fischer International Systems Corp. are hoping to "capitalize on the fact that Officevision raised user expectations on what office systems can do and then did not fulfill them," said Mike Anderson, a program director at Gartner Group.

IBM is now shipping a limited LAN version of Officevision, which is not available in the U.S. eventually hopes to provide, Palermo said. IBM is now working on a more work-group-oriented product with Lotus Development Corp.'s Notes and CC-Mail.

Memo for LANs is scheduled to ship in the third quarter, priced starting at \$2,000.

current engineering, in-house training, knock information centers in retail stores and medical applications, spokeswoman Li-an Lee said.

Sun already supports a smorgasbord of multimedia software, much of it from third-party providers, said David Smith, a senior research analyst at International Data Corp. in Framingham, Mass. "Their direction," he said, "is that all workstations will be multimedia-ready in the future."

But Sun's hardware will not change overnight. "Sun needs to set the stage for future products and to keep the Sun developer camp from getting restless," explained Peter Kastner, a vice president at the Aberdeen Group, a Boston-based market research firm. Kastner said he did not think the add-on chips would significantly add to a Sun workstation's cost.

Third-party software developers are preparing packages to complement Sun's hardware support for multimedia. "We've

reached a critical mass in interest in the third-party community, which feels there's a market out there," said Glenn Wichman, a senior software designer at Highland Software in Palo Alto, Calif.

Wichman designed the Multimedia Object Manager application development language, which is used with Sun computers. Sun has been scattering clues about its intentions in the multimedia market for months now, including a demonstration of a videoconferencing application last summer. But pressed by workaholic competitors Digital Equipment Corp. and IBM — both of which announced multimedia products last year — Sun has to make its move this year, analysts said.

"The Sun workstation is a very viable multimedia platform, but there are quite a few missing links," said Ajit Kapoor, vice president at Meta Group, Inc.'s image management service in Westport, Conn. Sun's new Solaris operating system must be refined to support full-motion video, including the capture of 30 video-image frames per second, he said.

# Novell invests in object firm

BY JIM NASH  
CW STAFF

SALT LAKE CITY — Novell, Inc. has agreed to invest \$700,000 in Seria Systems Corp., a maker of object-oriented development software for Apple Computer, Inc. machines, a spokesman for Seria said last week.

Novell will put one yet-to-be determined executive on Seria's board. It expects the partnership to grease the wheels of its network management plans by using object-oriented software to throw another hurdle in front of competitor Microsoft Corp.'s anticipated Windows NT technology (ENR) operating system, according to industry observers (ENR, Dec. 2, 1991).

Novell's immediate intention is to see how it can apply the principles of object orientation to its directory services, said a Novell source who requested anonymity. The firm has struggled to produce a naming, or directory, service that includes user addresses and rights for an entire network rather than segments of a companywide network.

Senior partner

Robert Raulerson, president of Paratronics, Inc., a Bellevue, Wash.-based networking consultancy, said he expects Novell to push for a version of Seria's program for its Netware operating system by midsummer.

He said Novell is in the process of matching virtually every possible advantage Windows NT could offer — in this case, object-oriented software currently lacking in Netware.

Novell, based in Provo, Utah, Crosspoint Venture Partners in Los Altos, Calif., and Intermetrix, Inc. in Boston are putting a total of \$2 million into the privately held firm located here, the Seria spokesman said.

Seria makes Seria's Programmer, software that contains 45 distinct application functions. Each of the functions — such as print, spreadsheet, animation and text — is represented by an icon. Developers can drag the icons into the appropriate place in their code, instantly placing a ready-made application.

Raulerson estimated that Seria's annual sales last fiscal year fell — is reported by an analyst — to be some sort of counterweight to the networking threat posed by Windows NT, agreed Brooks Hillard, president of Phoenix-based consultancy Business Automation, Inc. Both Raulerson and Hillard said that "NT, due to 1993, will likely obviate the need for Microsoft's LAN Manager network operating system."

# Sun will soon detail multimedia strategy

BY JEAN S. BOZMAN  
CW STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. is expected to soon take the wraps off of multimedia features for its workstations, including enhanced audio, Integrated Services Digital Network (ISDN) shooting gallery, and video support.

The new features will be anchored by specialized chips added to the Sun workstations' motherboards, according to Sun Chief Executive Officer Scott McNelly. Some of the new and improved multimedia capabilities may be revealed as early as the Uniform show in San Francisco, which begins on Jan. 22, McNelly said. But he declined to say when the new features — including the special chips — would be generally available or whether they would boost workstation prices.

McNelly conceded a recent industry seminar that Sun would not be first in the multimedia market but would instead aim to include multimedia capabilities on all shipped Sun workstations.

"We don't want to be the first pig to take flight over the shooting gallery," he said. "We don't want to be the first."

Sun's move into multimedia will accelerate in 1992 via software-related announcements. A Sun spokeswoman said last week, noting the company will offer add-on multimedia capability to standard workstations.

Sun's vision for multimedia includes collaborative applications including audio, video, telephony, fax, graphics and text. Typical business applications might include groupware, con-



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# Cabletron's edge over Synoptics points up trend toward direct sales

BY JOANIE M. WEXLER  
CW STAFF

A revenue shift between evolving smart-hub market leaders Cabletron Systems, Inc. and Synoptics Communications, Inc. indicates a trend in user preferences toward direct sales and support strategies.

Cabletron has finally outdistanced archrival Synoptics in revenue, though the two vendors are splitting hairs over what percentage of Synoptics' income is attributable to managed-hub sales. Analysts chalk up Cabletron's generally outstripping Synoptics to Cabletron's direct sales and support strategy.

"Using a direct sales force will position Cabletron well for the next generation of smart hubs," commented Janet L. Hyland, director of network strategy research at Forrester Re-

search, Inc., a consultancy in Cambridge, Mass.

However, Forrester predicted an overall dip in 1992 hub revenue growth (see chart) because of increased price competition.

Dataquest, Inc.'s director and principal networking analyst, Jerry McDowell, agreed that Cabletron's direct approach is largely responsible for the firm's success to date, although he predicted the firm will not be able to continue to afford the overhead in salespeople and follow-up support through 1992.

"If you're maintaining a 40% growth rate and continue to sell product for the same price, performance has to remain high and you must reach a new customer base," he said. "How do you reach that base cost-efficiently with direct sales?"

This issue is reflected in the status of Cabletron's Spectrum

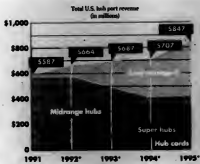
product, a high-end offering for enterprise-wide network management. Cabletron Chairman Craig Beason acknowledged that "we could sell a lot more Spectrum into the market, but we don't have the support, so we're holding back."

Cabletron's nine-month revenue through Nov. 30 was \$208 million, compared with Synoptics' \$184 million in the same period. In announcing its third-quarter revenue, Cabletron claimed its high-end smart-hub sales accounted for \$51.5 million of its \$78 million in revenue (66%), contrasted with Synoptics' third-quarter \$41.5 million in hub sales on \$59 million (70%). However, Synoptics countered that its high-end hub revenue actually accounts for about 90% of its third-quarter revenue.

The release of the initial com-

## Hub cool down

A sluggish economy and increased price competition could slow smart-hub revenue growth to 13% in 1992, down from 40% in 1991



Source: Forrester Research, Inc.

parison figures by Cabletron was an odd move, given the firm's 16-month repositioning from smart-hub vendor to network management software firm. Cabletron's network manage-

ment sales hover between 3% and 4% and are projected to reach almost 14% of the firm's revenue by 1993, according to Needham & Co., an investment analysis firm in New York.

## Proton pitches hub

While the two smart-hub market leaders duke it out, second-tier vendor Proton, Inc. is trying to salvage its hub customer base. Proton recently introduced a \$123-per-port, high-end hub designed first to allow IBM-domain environments to accommodate larger Token Ring, then bridge Ethernet into the same hub.

Dubbed the Series 90, the product is a follow-on to Proton's intelligent Series 70 Token Ring wiring hub and handles networks larger than 30 nodes. Come midyear, the Series 90 will support two Ethernets alongside the two Token Ring network modules that are now available. Modules for Proton's bridge/router technology are also slated for mid-1992.

Each hub module can be configured as a stand-alone network or can be integrated into one or several backbone networks, said Vice President of Marketing Nathan Kalowski.

Accompanying Proton network management announcements will allow Token Ring networks to be managed by IBM's Netview, Digital Equipment Corp.'s Decnet, AT&T's Accu-manager integrator or Proton's OS/2 and Simple Network Management Protocol (SNMP)-based Overview. The network management products are all slated to ship in February.

These moves "allow Proton back into the market to compete on an even footing," said Bruce Bancroft, northern regional vice president at Trillia, a systems integrator in Hopkinton, Mass., that sells Proton gear and has also been testing the Series 90 and management products.

Users and resellers agreed on the benefits of a \$4,995 SNMP-to-Netview gateway, which translates SNMP messages to Netview formats or Netview to SNMP. A Netview operator does not need to understand SNMP and Transmission Control Protocol/Internet Protocol addressing or vice versa.

"It's like a line at a candy store for beta testers for this gateway," said Bancroft, adding that 25 to 30 firms have shown interest in testing the product during the last three weeks.

"Full translation in both directions will eventually be necessary for everyone," said Jerry McDowell, director and principal network analyst at San Jose, Calif.-based research firm Dataquest, Inc. Currently, Code Corp. offers a bidirectional gateway to Netview, and one is on the way from Cabletron Systems, Inc.

The Series 90 architecture will accommodate Fiber Distributed Data Interface networks, Kalowski said. But Proton said it is not planning an FDDI local-area network or an FDDI bridge/router module until market demand heats up.

JOANIE M. WEXLER

## Start-up Coral gains 11th-hour financing

BY JOANIE M. WEXLER  
CW STAFF

MARLBORO, Mass. — Inter-networking start-up Coral Networks, Inc. last week secured \$4 million in venture capital and rumors that it was closing its doors for good.

The 11th-hour financing came from Dallas-based Sevin Rosen Funds and Gibraltar Trust in New York. This is the second \$4 million investment in Coral made by Sevin Rosen, which teamed with TA Associates and The Bass Trust to provide the firm's initial near-\$6 million backing 18 months ago.

Coral has been developing a heavy-duty combination bridge/router/multiplexer, aimed at high-speed local- and wide-area networks. By combining the functionality of products offered by numerous other vendors across a very high-speed backbone, Coral aims as a competitive threat to such inter-networking leaders as Cisco Systems, Inc., Wellfleet Communications, Inc. and Network Equipment Technologies, Inc.

Coral's chief financial officer, George McHenry, acknowledged the firm has a "very difficult time" finding financing. The firm cited the sluggish economy and the beta-test status of its product as stumbling blocks.

"We were in a no-man's land since we're," McHenry said. "With the current economic climate of the venture community, it's difficult to secure financing if you're not a late-stage company."

Sevin Rosen partner Jon Bay-

less said this is the case for "technology companies across the board." However, he added, the 35% to 40% growth rate of the high-end inter-networking market and discussions with the firm's beta-test customers "led us to believe Coral will ship its product at the right time."

Coral had scheduled its switch to ship last summer, said Elaine Jones, vice president of marketing, and it is now targeting March for general availability.

Contributing to slowdown McHenry and Bayless added that the passing of the firm's presidential bid from David Wagers to John Thibault in June 1991 slowed things down. The transition resulted in a decision not to manufacture the switch in-house.

In addition, "people want to

see the new fellow operate for six months" before putting up financing, Bayless said.

The sudden Nov. 22 departure of Frank Bruno, senior vice president of research and development at a Coral founder, was not a condition of the financing, Bayless said. Bruno was reportedly asked to leave.

Coral's Enterprise, Broadband Switch is in beta testing at Carver Computer Corp. and other sites. The start-up has been counting on the T3 market, "which has been slow to get to critical mass and is still relatively expensive," observed Rosemary Cochran, principal at Dedham, Mass.-based consultancy Vertical Systems Group.

The March shipping date is probably more in sync with the heavy-duty networking requirements addressed by the switch.

## CORRECTIONS

Because of an editing error, a story in the Dec. 16 issue stated that the computer industry is seeking to change the Computer Systems Policy Project (CSPP), a coalition of chief executives from 12 U.S. computer companies. It should have said CSPP wants to change a federal government program in high-performance computing and communications.

The table of contents in the Dec. 9 issue incorrectly implied that Software AG's client/server strategy is tied exclusively to Microsoft Corp.'s Windows. The open systems plan, as the story

points out, supports a variety of databases running on IBM mainframes, Digital Equipment Corp. VAXs and Unix machines. SQL-DB server is an extension to the firm's entire strategy rather than a new thrust, as the story stated.

Because of a production error, part of the year-end stock table in the Dec. 23, 1991/Jan. 2, 1992 issue of *Computerworld* was incorrect. The "Top Dollar Gainers" for the year are as follows:

Microsoft Corp.	\$51.84
Borland Int'l., Inc.	\$44.25
Novell, Inc.	\$38.00
Xerox Corp.	\$30.25
Pictetnet Corp.	\$29.63

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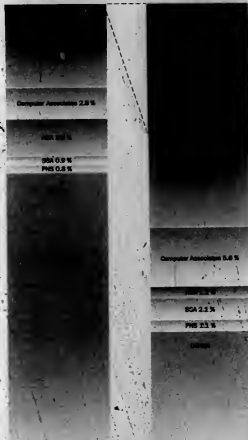
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## NEWS SHORTS

### Harris lands FAA voice pact

The Federal Aviation Administration (FAA) last week chose Harris Corp. over AT&T for a 15-year, \$1.66 billion contract to overhaul the voice communications network for the nation's air traffic control system. The system will initially be deployed at 25 regional facilities and will provide communications between pilots and controllers at the centers that track domestic flights beyond the jurisdiction of local airport towers. It will be built around Harris digital switches, Tandem Computers, Inc. Co-located controllers and Magnavox Electronic Systems Co. cockpit touch-screen displays.

### 'Iceberg' cools its heels

Storage Technology Corp.'s large disk array, code-named Iceberg, will go into customer beta-test sites a little later than planned. The firm cited final software refinements and internal testing as the cause of a delay in the beta-test schedule, which has slipped from the first quarter to the second quarter of this year. "We continue to believe we will meet our target of first production shipments at mid-1992, but this puts added pressure on achieving that goal," Ryal R. Poppa, chief executive officer at Storage Tech, said in a written statement. The company will formally announce Iceberg on Jan. 28.

### DEC to expand chip facilities?

Digital Equipment Corp., based in Maynard, Mass., has confirmed that it is "exploring the opportunity" to build a new semiconductor chip manufacturing plant, according to a company spokesman. While no location has been specified, speculation centers on Hudson, Mass., home of DEC's current chip manufacturing facility.

### Zale empire loses sparkle

Zale Corp.'s effort to stave off involuntary bankruptcy through a dramatic downsizing of its troubled nationwide retail jewelry empire may endanger its outsourcing pact with IBM subsidiary Integrated Systems Solutions Corp. Signed last June, the 10-year contract, estimated by analysts to be worth \$286 million, provides for renegotiation in the event that Zale's total volume falls below a stated level. However, Zale information systems head David Karney said, "That point has not been hit yet." Zale plans to close some 400 of its 2,000 stores, freeze certain payments to creditors and cut its work force by an estimated 20%.

### Cray Computer stung by delay

The holiday season was less than merry for Cray Computer Corp. after the University of California Lawrence Livermore National Laboratory, Cray's sole customer for its new \$30 million Cray 3 supercomputer, decided to give the business to ex-affiliate Cray Research, Inc. Livermore tired of delays for the Cray 3 and exercised a provision in a contract with the two supercomputer companies to buy a C-90 from Cray Research, according to a Cray Computer executive. In a prepared statement, Bill McCurdy, director of Livermore's National Energy Research Supercomputer Center, said another supercomputer was badly needed because "requests for computer time already exceed the center's current resources threefold."

### Hitachi to resell IBM notebooks

IBM confirmed reports published in Japan that it had reached an OEM agreement with Hitachi Ltd. to supply Hitachi with notebook computers to sell on the Japanese market. A spokesman said the notebooks would be a version of IBM Japan's PS/55note, which runs a Japanese version of DOS. IBM is offering the notebooks as an alternative to NEC Corp.'s proprietary system, which is dominant in Japan. A Japanese newspaper said Hitachi would buy at least 2,000 notebooks a month beginning in April.

More news shorts on page 87

## Shrink-wrapped viruses on rise

Experts say software publishers being infected by 'stealth' virus

BY MICHAEL ALEXANDER  
OF NEW YORK

Computers are increasingly being infected by viruses from an unlikely source: mainstream software publishers.

Although hard statistics are unavailable, some experts say so-called shrink-wrapped viruses are among the most prevalent methods of infection.

In the last weeks of 1991, Novell, Inc. was forced to send letters to 3,800 customers warning that the December release of the Network Operating System

Standard Volume 54-in. disk had inadvertently been shipped with the Stoned III virus.

Stoned III is a relatively new breed of "stealth" virus that is designed to evade detection by traditional antivirus scanning techniques and is often tricky to remove once discovered.

Several recipients of the disks alerted Novell on Dec. 13 after their systems were infected by the virus. There are no reports of damage, according to Novell.

Novell's letter said the virus would infect a personal computer if an infected disk was used to boot the machine but would not infect local-area network servers. The firm also shipped a McAfee Associates virus scanner and cleaning utility that is designed to detect and remove the virus.

In early December, Konami, Inc., a software games publisher, sent a letter to customers warning them that a release of Spacewar had been infected with the Stoned virus, an earlier version of Stoned III. Konami said the virus was detected before a large number of copies of the game had been shipped.

The number of infections triggered by shrink-wrapped viruses is mounting, although most software manufacturers routinely screen their products before shipping.

Disks that are shuttled between home and office are the primary source of infection, according to a recent study by the National Computer Security Association in Washington, D.C. In a survey of 600 firms, respondents said 43% of virus infections occurred after employees brought an infected disk to work.

The problem of shrink-wrapped viruses stems from the rapid influx of stealth viruses that has emerged during the past 18 months, said John McAfee,

president of McAfee Associates, publisher of the VirusScan antivirus software program. "In the past year, there have been 100 occurrences, reported to us of shrink-wrapped viruses on a fairly large scale involving more than 100 diskettes," McAfee said. About half of all viruses—some 200—introduced in the past six months have been of the stealth variety, he said.

Stoned III is the stealth ver-

**T**HE PROBLEM OF shrink-wrapped viruses stems from the rapid influx of stealth viruses that has emerged during the last 18 months.

JOHN MCAFEE  
MCAFEE ASSOCIATES

sion of the Stoned virus, discovered several years ago. If left unchecked, the virus can destroy a boot sector or partition tables on a hard disk, causing substantial damage, McAfee said. The virus may cause a pro-martians message to appear on the screen.

"Without using a specific scanner that knows how to detect that virus in memory, there are no techniques to detect it," McAfee said. Standard antivirus techniques such as checking for changes in file sizes will not work with stealth viruses, he said.

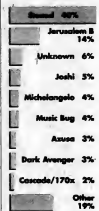
The National Computer Security Association's study indicates that 9% of infections were caused by viruses on finished products and demonstration disks. This is the first year the study was conducted, and figures for previous years are not available (CW, Nov. 2, 1991).



### Germ warfare

The Stoned virus was the most prevalent in 1991

Percent of incidents reported in 1991  
Total: 6,541



Source: McAfee Associates

## Swap meet

About three dozen of the world's top virus trackers are expected to attend an unusual virus swap meet at an upcoming computer security conference.

The event, sponsored by the Antivirus Methods Congress (AMC), will take place during the Fifth International Computer Virus & Security Conference slated to be held March 11-13 in New York.

"Virus researchers routinely swap viruses, but [until now] there hasn't been an organized forum [in which] to do it," said Dick Lefson, president of the AMC and an information technology professor at New York University.

The newly established AMC is an industry group that proposes to formalize the exchange of

virus information among researchers, antivirus software developers and others who meet certain guidelines. The group has established a credentials committee and plans to limit the swap

meet to established virus trackers who are sponsored by members of the AMC's board or by fellow members.

The AMC also has a nonproliferation committee that is in the process of developing controls to limit the accidental dissemination of viruses and to pinpoint the origin of a traced virus should it be released.

Lefson said. The procedures for capturing and tracking viruses will not be made public, to heighten their effectiveness, he added.

MICHAEL ALEXANDER



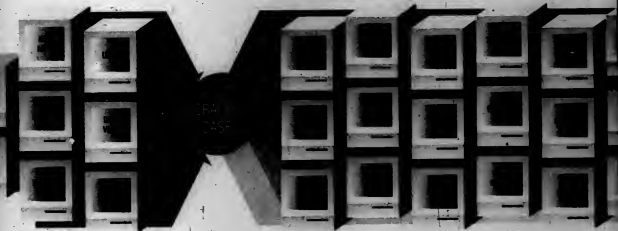


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# Industry wary of former Soviet market

BY ELLIS BOOKER  
CW 11/17/92

CHICAGO — With the central government of the former Soviet Union officially out of power, U.S. high-technology firms trying to do business in the region face even more uncertainties than they did just six months ago.

At best, those firms that made bold investments in the former Soviet Union during the rapid thawing of the Cold War probably face a slowdown of buying and joint venture activity while the republics that now constitute what was the Soviet

Union sort out their trade policies.

At worst, the time, effort and money these companies spent nurturing relationships with the now-defunct central Soviet government could be swallowed up in chaotic and multiple social, political and economic environments.

For instance, Control Data Corp. in Minneapolis, a company with a long history of deals with the Soviet government,

found itself briefly without a customer. Fortunately for CDC, a number of Soviet government agencies have been transferred to the Russian Republic.

"In our case, we were dealing with the larger government entities, and most of these have gone [to the Russian Republic] intact," said James E. Ousley, president of CDC's Computer Products Group.

Eather Dyson, an industry analyst and editor of the "Release 1.0" newsletter,



stands by her earlier assessment that the long-range opportunities for U.S. firms are good. "There was and is a tremendous opportunity," she said, noting that the republics that now compose what was the Soviet Union have 280 million people "with a huge need for information technology."

Dyson and companies with Soviet experience emphasize that some of the most fundamental obstacles to doing business in the region predate the breakup of the country.

SPSS, Inc., a maker of statistical software in Chicago, tried and failed to set up a distributor arrangement with a Moscow-based firm. "It went sour after six months. They did not understand the concept of capitalism, of how we do business in the West," an SPSS spokesman said.

## Currency problems

An even more serious impediment is the lack of "hard" currency — the ruble is still unconvertible on the world currency exchanges. A number of U.S. software firms have addressed this by selling their product for rubles, rather than dollars, to build both market share and loyalty.

Nantucket Corp., the Los Angeles-based maker of Clipper software, has sold a couple of thousand copies of its application development software in the former Soviet Union during the past 15 months, according to company President Larry Heimendinger. Heimendinger, who says his firm has always emphasized a long-term approach, said he is cautiously optimistic.

"There are no firm, hard principals on how you do things," he said.

Cesare F. Rossi, technical adviser to the deputy assistant secretary for international trade control, said a review of high-technology imports will likely take place in the coming weeks or months.



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## A silver lining

For software entrepreneur Michael DeLyon, the Soviet Union's dissolution could be a godsend.

"It's like [having] NASA go out of business," he said, referring to the talent in the former Soviet Union that he can now add to his database of 700 Soviet computer scientists and software engineers. DeLyon's Intercontinental Software is Palo Alto, Calif., employs Russian software engineers to build custom computer code.

DeLyon said he can put Soviet workers on a programming job at a fraction of the cost for U.S. workers. "The type of expertise that you'd hire for \$75 an hour here, we can provide at \$25 per hour there," he said.

Is DeLyon worried about social disruptions? "All we need for our business is a hacker. We need a telephone line, and we need an electric outlet," he said. Knowledgeable, motivated people, he added, is the one export the former Soviet Union can offer the world today.

ELLIS BOOKER



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## Grace Hopper, mother of Cobol, dies

Feisty mathematician and Navy admiral, 85, most proud of students

BY MITCH BETTS  
in Boston

ARLINGTON, Va. — "Amazing Grace" Murray Hopper, one of the first computer programmers and mother of the Cobol pro-

gramming language for business information systems, died on New Year's Day. She was 85.

Defying skeptics in the 1950s who said computers could only do arithmetic, Hopper developed the Flow-Matic programming

language in 1957 for business data processing applications on the classic Univac line of computers from what was then Sperry Corp. Flow-Matic was notable because it used English-like instructions and was the main pre-

cursor of Cobol, the most widely used business programming language today.

In the latest of a long string of honors and awards, Hopper received the National Medal of Technology from President Bush last September. She was cited "for her pioneering accomplishments in the development of computer programming languages that simplified computer

technology and opened the door to a significantly larger universe of users."

The strong-willed mathematician summed up her philosophy in a 1986 interview: "If it's a good idea, go ahead and do it. It's much easier to apologize than it is to get permission."

She was called "Amazing Grace" by subordinates because of her successful careers in academia, business and the U.S. Navy, her favorite employer. She retired in 1986 as the Navy's oldest officer on active duty, with the rank of rear admiral, and became a senior consultant to Digital Equipment Corp. in Washington, D.C.

Hopper died at her home here just a few weeks after her 85th birthday, DEC announced. The exact cause of death was not reported, but a DEC spokesman said the died of "old age" after a long period of poor health.

### No-nonsense opinions

Hopper was often called feisty because of her strong, no-nonsense opinions about data processing. Computer pioneer J. Presper Eckert recalled in an interview last week that Hopper was determined to bring structure and discipline to the art of computer programming.

Eckert praised Hopper for fighting the young computer industry's "Tower of Babel problem" of having multiple, incompatible versions of a programming language. Hopper vigorously promoted standardization of programming languages so they would be hardware-independent.

Always fond of gadgets and geometry, Hopper obtained a doctorate in mathematics from Yale University in 1934 and was an associate professor at Vassar College.

In 1943, at age 37, she left academia to join the war effort of the U.S. Naval Reserve. In her first Navy assignment, she was thrust into the nascent world of computing as one of three "coders" for the first large-scale digital computing machine, the Mark I, at Harvard University.

In 1949, she joined Eckert-Mauchly Computer Corp. in Philadelphia as a senior mathematician in charge of programming the Univac I, and she stayed with the company as it was absorbed by Remington Rand and then Sperry. It was during this Univac era that Hopper developed the first compiler in 1952 and Flow-Matic.

Hopper frequently told interviewers that she was most proud of "all of the young people I've trained over the years — that's more important than writing the first compiler."

Although originally retired from the Navy reserve in 1966 because of age, Hopper was recalled within a year to full-time duty to help the Navy standardize its programming languages.

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## OSF adds end users to meet open systems challenge

BY MARYFRAN JOHNSON  
CW STAFF

CAMBRIDGE, Mass. — The Open Software Foundation (OSF) began its life as a vendor-driven organization, but end users now form the fastest growing segment of its membership.

OSF President David Tory said last week.

In 1991, the OSF brought its total membership to more than 300 with the addition of 62 new members, including 23 user companies such as JC Penney Co., Georgia Pacific Corp. and Bell Communications Research.

All told, users make up 27% of the membership roster now.

The increased user participation coincides with increasing user pressure on vendors to open up systems and deliver products at a faster pace.

In September 1991, for example, participants in the OSF's

End User Forum presented management with a blunt message. "We told them there needs to be a lot more delivery of product," recalled Warren Hoffman, an OSF user member and principal consultant at Du Pont Co.'s Information Systems Division.

"It's great that OSF is doing

the Distributed Computing Environment, but we need to see a large number of software suppliers who are going to do it, too. Otherwise, what's the use?"

"End users are playing an active role on all the various committees and task forces. OSF is trying to open up their processes to get even more end-user involvement," Hoffman said.

The \$25,000 membership fee (discounted for universities and nonprofit groups) entitles members to a regular newsletter and a smorgasbord of groups and task forces to sample.

For example, Boeing Computer Services Co.'s participation in the OSF has meant earlier access to technologies such as the Motif graphical user interface, noted Jim Presti, an IS manager at the firm and chairman of one of the OSF's special interest groups.

## Pyramid eyes restructuring

BY KIM S. NASH  
CW STAFF

MOUNTAIN VIEW, Calif. — Staff cuts, a corporate reorganization and other expense-paring efforts are in Pyramid Technology Corp.'s immediate future, the company said last week. These steps were prompted by the midrange systems maker's preannouncement last week of an operating loss for its fiscal 1992 first quarter that it blamed on the worldwide recession.

Tight user budgets also hurt Pyramid during the closing months of last year. About 20% of Pyramid's annual sales comes from regional Bell operating companies, and up to 15% comes from the UK, according to a Pyramid spokesman. Sales from both these segments were down considerably, he said.

The company said it expects a sales drop of "several million dollars" compared with first-quarter 1991's revenue of \$56 million, resulting in a loss. Profits for the first quarter of 1991 topped \$4.6 million. Official figures for the quarter just ended will not be released until Jan. 21.

Wall Street watchers noted that Pyramid's announcement follows similar events at competitors Sequent Computer Systems, Inc. and Digital Equipment Corp.

A company spokesman declined to provide specifics about the restructuring, saying only that Pyramid aims to reduce spending by \$4.5 million per quarter going forward.

That will shrink the company's break-even level, putting it in a good position for the short term, said Shao Wang, an analyst at Smith Barney, Harris Upham & Co. in New York.



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 12. Manufacturer/End User  
 13. Wholesaler/Reseller  
 14. Business Service (except ISP)  
 15. Government, State/Local/County  
 16. Communications Systems/Public Utilities  
 17. Communications Systems/Private Industry  
 18. Manufacturer of Computers, Computer Peripherals, or Peripherals  
 19. Systems Integrator, MFG, Computer Service  
 20. Systems Software Planning & Consulting Services  
 21. Computer/Peripheral Dealer/Owner/Reseller  
 22. User/Other \_\_\_\_\_ (Please specify)

2. TITLE/FUNCTION (Circle one)  
 20. GENERAL MANAGEMENT  
 21. Chief Information Officer/Vice President/Chief VP  
 22. Director of Management  
 23. Director of Systems, Information Center  
 24. Manager, Sys. Planning, Admin. Serv., Data Comm.  
 25. Manager, Sys. Mgt., LAN Mgt., PC Mgt.  
 26. Director, Sys. Development, Sys. Architecture  
 27. Mgr., Systems/Program. Software Dev.  
 28. Programmer, Systems Developer  
 29. Sys. Integration/VP/Consulting Mgt.  
 30. Programmer, Systems Developer  
 31. President, Chief Executive, General Mgt.  
 32. President, Chief Executive, General Mgt.  
 33. Vice President, Chief VP  
 34. Treasurer, Controller, Financial Officer  
 35. Engineering, Research, R&D, Tech. Mgt.  
 36. Sales & Mktg. Management

OTHER PROFESSIONALS  
 37. Medical, Legal, Accounting Mgt.  
 38. Medical, Legal, Accounting Mgt.  
 39. Educator, Journalist, Librarian, Student  
 40. Other \_\_\_\_\_ (Please specify)

3. IS INVOLVEMENT (Circle all that apply)  
 Please indicate your involvement in: ☐ MGMT/OP  
 A. Manager/Supervisor (MGT/OP) Staff  
 B. Management/Supervisor (MGT/OP) Staff  
 C. Purchase of Equipment  
 D. End User of Equipment  
 E. No Involvement

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## ADVANCED TECHNOLOGY

## Combining the methods of 'two separate worlds'

Firms that produce mixed-signal chips for processing analog and digital data find challenges — and profits

BY CLINTON WILDER  
CW STAFF

With the growing popularity of multimedia, more analog data in the form of audio and still and moving images is finding its way onto computers. That means a big surge in demand for a type of semiconductor called a mixed-signal chip, which can process both analog and digital data.

The hybrid chips have been around for years, but there are technical barriers to large-scale production of high-quality, fully integrated mixed-signal chips. However, the lucrative potential of applications based on the dual-function chips is prompting several U.S. chip vendors to batter down those barriers.

**Design, testing most difficult** Analog-to-digital conversion (and vice versa) is a fairly straightforward process, and it is the key to technologies ranging from telecommunications to disk drives. The technology problems crop up in designing, testing and manufacturing hybrid chips.

The disciplines of design and testing for analog and digital chips have traditionally been two separate worlds, said Jeff Teza, vice president of corporate technology at Brooktree Corp., an emerging San Diego-based maker of mixed-signal chips. "The processes that were optimum for building the best analog chips are not

the same for digital," he said. "If you want the best quality analog chips, they tend to be stand-alone."

In CMOS technology — the basis of most chip manufacturing today — testing the chip by running signals through the gates of digital circuitry creates disruptive noise. "That's a no-no for precision analog testing," Teza said.

One solution, as practiced by Brooktree and other companies, is to test the digital processing with as little I/O — fewer gates, in other words — as possible. "We have invented a lot of testing methods inside," Teza said. "We protect trade secrets in the

test area almost as much as the designs themselves; it's a competitive barrier."

Brooktree has also had to cope with using commercially available computer-aided design (CAD) tools for chip design that have traditionally addressed analog or digital design but not both.

A key to the successful design of high-quality chips is the ability to simulate the performance of prototype chip designs in the CAD software. But most CAD tools for analog design focus their simulations on the transistor level of the chip, while CAD for digital is at what Teza calls "a different level

of abstraction" — the actual logic processes and gate sequencing.

"In a mixed-signal design, you would like to do very low-level simulations for the digital part, but the overall chip might require a very high-level simulation," he said. "Right now, there is a gap between those two."

Brooktree's solution has been to create its own methodology using different CAD tools, such as logic simulators, circuit simulators and behavioral models. "We have sort of glued it together, using the best tools we could get — whether analog or design — at all levels," he said.

**Market to double by '94**

Brooktree posted about \$85 million in revenue in 1991 selling mixed-signal chips exclusively. The mixed-signal market will top \$5 billion this year and will double by 1994, according to VLSI Research, Inc., a chip industry market research firm in San Jose, Calif.

The leaders in the niche are some of the industry's biggest players: National Semiconductor Corp., Philips/Spectra, Inc., Texas Instruments, Inc., Analog Devices, Inc. and Motorola, Inc. Emerging smaller competitors include Brooktree, Crystal Semiconductor (now owned by Sierra Logic, Inc.) in Austin, Texas, and Cirrus Semiconductor Corp. in San Jose.

"The interesting thing in they are all American companies," said Gus Richard, product manager at VLSI.

## Debugging 'insect' crawls one step closer

BY MICHAEL ALEXANDER  
CW STAFF

Bugs have long been the bane of computers, but at least one researcher believes some bugs could be used to repair computers and to tackle other tasks.

Johannes Smits, an associate professor of electrical engineering at Boston University's College of Engineering, has received a patent for a computerized "silicon ant," a device that is small enough to crawl around the innards of a computer and sophisticated enough to locate and repair defects.

The same silicon ant could be programmed to detect and pick up specks of radioactive dust in a nuclear medicine laboratory, hold human cells for inspection under a microscope or even plant electronic bugs for professional snooping.

The notion of a truly useful silicon ant has been met with "considerable skepticism," Smits acknowledged. "The real applications seem far-

fetched," the researcher said. However, other accepted technologies, notably lasers, were invented before their potential applications were fully appreciated, he said.

Smits has not actually built the tiny robot — the first working prototype is about two years away, he estimated. Thus far, he has been able to fabricate the legs that the ant will need to maneuver.

The ant could measure 3 to 7 mm long, depending on its function. A robot equipped with a charge-coupled device, used as an image sensor in video cameras, would be larger than one intended to kill a certain type of crop-damaging insect, for example.

The ant consists of a central processor that serves as its brain, a solar or acoustic cell that provides energy, and six pairs of legs.

The ant's legs are actually tiny

micromotors that consist of piezoelectric film attached to the top surfaces of a pair of silicon cantilever beams and a V-shaped piece of silicon,

voltage to each beam causes the V to swing back and forth at the same time, alternating the voltage to each leg causes the ant to scurry forward and backward.

Additional pairs of silicon beams can be attached to the ant's head to act as a pincer or to its tail to act as a tiny saw or other device.

Getting the piezoelectric film in the ant's legs and pincers to stretch and contract predictably is the real breakthrough in designing the ant, said Smits, who is also the director of the engineering department's sensors, actuators and micro-mechanics laboratory and an expert in piezoelectric technology. The remainder of the ant is readily available or could be easily produced, he added.

Smits calculated that the device would be capable of traveling fast enough to outrun a real bug. It should be able to carry up to 300 times its own weight, according to Smits.



# Open systems.




## Everyone agrees they're

No one's debating whether open systems are a good idea, but you'll hear plenty of discussion about what open systems *are*.

Some insist, for example, that an open system is a UNIX® system. But to others it's whatever it takes to get their different operating systems, networking protocols and databases working as one, and the sooner the better.

That's why IBM views open systems so openly. To us, they begin less with particular technologies and more with the needs of your business.

The real goal is to liberate information that's trapped around your company, so more of your people can use it more easily, and to open commu-



## good, but not everyone agrees how to get there.

communications with customers and suppliers, who no doubt planned their systems without thinking about yours.

And of course, you need to accomplish all this without scrapping your existing multivendor investments.

So the paths to open systems will vary, but there's one thing that won't—consistent industry standards. IBM is fully committed to open systems, so we're equally fervent about standards.

We're active on over 1,200 standards initiatives. We're a sponsor of OSF<sup>®</sup>, a member of X/OPEN<sup>™</sup> and we support ISO<sup>®</sup>, ANSI<sup>®</sup> and IEEE<sup>™</sup>, to name a few. And when a new standard

holds promise, we support its development.

What's more, we offer AIX<sup>™</sup> for UNIX users and we are improving our SAA<sup>™</sup> and AIX systems to work more openly with each other and your non-IBM systems. So as you move to open systems, your investments will be protected. We can also help you open your system with consulting services and technical support.

At IBM, we now measure everything we do—from the desktop on up—against a yardstick of openness. It's what we have to do because it's what you want to do. To get more information, call us at 1 800 IBM-CALL.



## EDITORIAL

## Testimonial

I can clearly recall the first time I heard Grace Murray Hopper speak to a large group. It was 10 years ago, and as a junior member of this editorial staff, I was assigned to cover her conference presentation.

My expectations were to be bored by an old-timer (she was 75 then) rambling on about computing days past. I learned two things. First, one of the greatest social sins is to prejudice someone solely on age. And second, what a remarkable woman she was!

For a full hour, Grace Hopper held her audience captive in the tender trap of utterly lucid discourse. Her presentation skills were undeniably strong, almost intimidating. Uncanny was her ability to get the crowd focusing on her image of the 1980s and beyond.

She believed the conventions of the past — the Cobol-dominated world she helped foster — would crumble under the weight of a PC revolution that was still years away.

For all her achievements and contributions to the world of information technology, we should remember her words from an interview with us a decade ago when she spoke of her praise for people who "aren't hampered by 'We've always done it this way' or 'It won't work.'"

## Us/2

This year — the end of this quarter, in fact — is put-up-or-shut-up time for IBM and OS/2 2.0. And while so much attention has been focused on the importance to IBM of its meeting its stated and implied promises with this product, the spotlight needs to be turned on the customer.

For big IBM sites — and that means many major corporations — OS/2 is a critical part of Systems Application Architecture — the systems blueprint many of these companies have tacitly bought into. So while the corporate computing world of the desktop has been revolving around the Windows-centric universe, some big users are holding out for OS/2 because their major supplier has indicated they should.

There are many critics and skeptics out there who claim IBM will never incorporate all the promised and desired features into OS/2, and even IBM has as much as admitted that the development process has become woefully complex.

If the company delivers on promises and expectations, that's great. The customer has more choice, and there's greater competition in the vendor community.

But if for some reason the skeptics prove themselves right on this critical technology issue, let's hope IBM thinks of its customers first and doesn't string them along a path that leads to no known destination.

*Bill Laberis*

Bill Laberis, Editor in Chief



## LETTERS TO THE EDITOR

## DBM class ignored

Regarding "Wave of the future — with a catch" [CW, Dec. 2], I agree with the comments that parallel architectures can be "devilishly hard to program" and that porting serial programs to multiple instruction/multiple data machines is frequently quite difficult.

However, there are at least two major classes of uses of computers that make system-managed concurrency practical. These two classes are the database management class DBM and the array processing class AP. The DBM class includes retrieval, update, control of logical integrity and authorization control. The AP class includes those cases of engineering and scientific computing in which the same kind of computing has to be executed over large arrays of any dimension.

The DBM class was completely ignored in the article. For the AP class, only the special case of vector processing was discussed.

A fact that should have been noted is that system-managed concurrency is readily achievable for the DBM class if the relational approach is adopted.

E. P. Cold  
Menlo Park, Calif.

## Author responds

Regarding Harry Miller's Nov. 25 reply to my Viewpoint column, "Don't mess with what isn't yours" [CW, Nov. 4], allow me to clarify several points:

First, the two lawsuits IBM has filed against Comdisco are unrelated, and I did not suggest otherwise in the original article. Second, concerning the re-

turn of parts owned by IBM and IBM Credit, the contract obligations are clearly defined in IBM Credit's Term Lease Master Agreement. Generally, IBM Credit will not accept substitute parts.

As I described in my analogy, if it were my property, I wouldn't want unauthorized parts of questionable ownership installed, qualified by a generality of "like for like."

Finally, the lawsuit filed in Chicago is not over "modified" parts; it is about "replacement" parts. It is one thing to ask modified parts, quite another to pass them off as "IBM original" without telling the buyer.

This is a case of customers not getting what they were paying for. Please note: It wasn't until a court order that Comdisco decided to alert affected customers and make restitution on this allegedly illegal activity.

Sam Albert  
Sam Albert Associates  
Scarsdale, N.Y.

## It's Atari's Atari

"Apple stocking antitrust ammunition" [CW, Dec. 16] includes the following paragraph:

"Commodore Business Machines, Inc.'s Atari ST, for instance, gained such notoriety as a pirate's machine that it eventually became almost impossible to get developers to create applications for it, according to SFA Executive Director Ken Welch."

You have got to be kidding! The Atari ST is manufactured by Atari Computers, not Commodore Business Machines. Commodore manufactures the Amiga line of computers which has no problem getting developers to write applications.

The Commodore Amiga is the

best computer for Newtek's Vidio Toaster, a product that has had more coverage in noncomputer press than any other personal computer product to date.

Do not confuse the Commodore Amiga with the Atari ST. The Amiga has an installed base of more than 3 million and is far from being the dead-end product the Atari ST is.

Charles E. Hill  
Orlando, Fla.

## Cutting legal costs

In the Forecast 1992 issue, Joel Gitman wrote about "The Right Ways to Cut Costs," related to legal issues in systems planning and management.

He missed the boat on the single most effective way to cut legal costs and problems — that is, to include an arbitration agreement in every contract you sign. This will, in most cases, drastically reduce the lawyers' fees and the time required to reach settlements. It will also increase the likelihood that someone with some knowledge and interest of the business and fairness issues will make the judgment.

Contact your local chapter of the American Arbitration Association for guidance on how to include the arbitration agreement.

James R. Gurd  
Durham, N.C.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cockscote Road, Framingham, Mass. 01701. Fax number: (508) 875-8091; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

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# HOW DO YOU INTRODUCE THE BIGGEST INNOVATION IN OPEN OURS IS THE

## Research Newsletter

CONTROL DATA MAKES A STUNNING ANNOUNCEMENT—LEAVES ITS SYSTEMS COMPETITORS IN THE DUST, BUT CAN THE COMPANY CAPITALIZE ON ITS LEAD?

### INTRODUCTION

On October 1, 1990, Control Data Company (CDC) made a stunning announcement. It introduced a new line of mainframe computers that have provided a thousand-fold increase in performance over the previous generation. The new CDC 4680 is the first mainframe computer to be designed from the ground up for the open systems market.

Control Data made this announcement in a relatively quiet way. It didn't make a big splash. It didn't make a big splash.

But it did make a big splash.

It did make a big splash.

It did make a big splash.

It did make a big splash.

It did make a big splash.

It did make a big splash.

It did make a big splash.

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It did make a big splash.

## IT HAS THE BEST OF EVERYTHING.

Its attributes include standards compliance, built-in scalability, network connectivity and truly impressive levels of performance—including the highest SPECchpout number on open systems to-day (205) and 1381 AIM User Loads—both new world records.

It ensures interoperability with its heterogeneous networking capabilities. It meets any organization's critical security and reliability

IEEE, ANSI and OSI/GOSIP applications are easily portable.

In plain English, as Dataquest writes, it "delivers all the requisite attributes that both leaders and niche players in the open systems market boast about."

## BUT CONTROL DATA DOESN'T MERELY PROVIDE GREAT HARDWARE.

We provide great solutions, too. As a prime contractor, we've implemented open sys-

## CONTROL DATA INTRODUCES THE 4680 INFOSERVER, THE HIGHEST-PERFORMING SUPERSERVER IN THE INDUSTRY.

Not only does the 4680 offer superior performance, but it also has a user-friendly, easy-to-use interface.

Excuse us, but we at Control Data really do have the biggest innovation in open systems computing. Not Sun Microsystems. Not Digital. Not any of our competition.

It's called the 4680 InfoServer,<sup>™</sup> and it's the industry's first mainframe-class UNIX server. But more importantly, it's the fastest, the most expandable multiprocessor on the market today. In fact, as industry analysts at Dataquest<sup>®</sup> report, it delivers "a phenomenal level of performance yet unseen in the industry."

It is, to continue in their words, "a stunning announcement" that "leaves its open systems competitors in the dust."

requirements. And it manages even the most data-intensive environments.

And because it conforms to all major standards, including POSIX (NIST certified),

it's the solution for some of the most complex data-intensive environments in the world.

For example, we helped move the Army Corps of Engineers from a data-processing

Performance	Comparison of UNIX-Based RISC Servers				SUN 680 MP
	CDC 4680	DEC 5800	HP 750	IBM 850	
Maximum No. of CPUs	4	4	1	1	4
SPECmark/SPECchpout (Max)	205	30	78	72	91
AIM User Loads	1381*	65*	NP	310	NP
TPC-B (Trade)	112*	NP	NP	NP	NP
Max. Disk Capacity (GB)	179	58	40	22	52
<b>Standards Compliance</b>					
POSIX Certified UNIX	YES	YES	NO	YES	NO
OS/2 Interop. Registration	YES	NP	YES	YES	NP

\*With four processors; certified and scalable; UNIX. \*\*With one processor; multiprocessor data not available.

†With two processors at a price of \$5.3M; NP = Not Published.



SYSTEMS WHEN EVERYONE ELSE IS MAKING THE SAME CLAIM?

# BEST. PERIOD.

system that allowed for only fragmented communications, to a single highly integrated system that is literally transforming the way they do business.

And, to modernize key aspects of the space shuttle program, we integrated a large number of open systems products for the Flight Analysis and Design System (FADS) program.

In Denmark, FIH (Finance for Danish Industry), highly regarded throughout the financial community for the innovative ways it combines information technology with marketing, chose the InfoServers for an ORACLE client/server environment that integrates open systems technology with over 100 PCs.

Similarly, when Canada's Digitech Information Services, Ltd. needed to migrate its petroleum information database from an antiquated mainframe environment to an open systems alternative, they chose us because we were the only supplier who had implemented the necessary enhancements.

In fact, no company is more uniquely qualified

to provide open systems solutions than we are.

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\*Pen Vision News/Lampson Report

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This new system is priced on par with 33 MHz 486SX machines, yet performs up to 40% faster. And its sheer processing power is simply backed by a 100 MB hard drive with a 32 KB cache for increased throughput. A dual floppy drive completes the excellent storage arrangement.

A 1024 x 768 14" color monitor with a 70 Hz refresh rate gives you a flicker-free display. With 32,000 colors, if you make a small expansion of video RAM. Should anything go wrong, the built-in SmartView™ diagnostic display can find the problem, even if the monitor goes down.

The 486D/25 comes with six expansion slots and five drive bays for added flexibility. You'll also get factory-installed MS-DOS 5.0, Microsoft Windows 3.0 and a Microsoft Mouse.



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The system comes with a 100MHz connector, MS-DOS 5.0, 16MB RAM, and a 3.5-inch floppy disk drive.

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There are plenty of companies anxious to sell 486 systems at a low price. All they really need is a supply of parts (the cheaper, the better) and a garage to assemble them in. Once the "production line" gets going, they place

a few ads in the paper. After that, of course, it's anyone's guess as to which will last longer: the computer or the "company" it came from.

At Dell, on the other hand, we offer lower prices by cutting down on traditional retailer mark-ups, not quality. In fact, we're almost fanatical about the quality of every machine that leaves our state-of-the-art factory. That attitude is reflected in the way we design, test, manufacture and ship our 486 systems.

The 486/333 is one of the few computers in January '89 MSB 324M4.



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- ☐ Small Footprint
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- ☐ Super VGA Color, 14", 1024 x 768, .28mm dot pitch

- ☐ UltraScan 14C, 14", 1024 x 768, .28mm dot pitch non-interlaced, 70Hz

- ☐ UltraScan 15C, 15", 1024 x 768, .28mm dot pitch non-interlaced, 70Hz

- ☐ GPD-16C, 16", 1280 x 1024, .31mm dot pitch
- ☐ GPD-19C, 19", 1280 x 1024, .31mm dot pitch

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- ☐ MS-DOS 4.01
- ☐ MS-DOS 5.0
- ☐ MS-DOS 2.12
- ☐ Dell UNIX\* System-V

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# SYSTEMS & SOFTWARE

## HARDWARE SHORTS Fujitsu hits UK market

Fujitsu Systems of America, Inc. recently announced that ICL UK's Financial Services Division will market Fujitsu's Series 7000 Automated Teller Machines in the UK. The Series 7000 offers color graphics on a 13-in. CRT, voice guidance and enhanced access for persons with disabilities.

Unisys Corp. has announced a new Branch Automation System. Financial Services Architecture Release 4.0 was demonstrated recently at the Bank Administration Institute Retail Delivery Show in Orlando, Fla. New features to be added into the software include enhanced customer service capabilities and support of CTS Supergraphics 2000 workstation hardware. Priced at \$6,000 per branch, Release 4.0 is now available.

## Tandem outlines its strategy

*Firm moves into client/server field in hopes of increasing market share*

### ANALYSIS

BY JEAN S. BOZMAN  
OF STAFF

CUPERTINO, Calif. — Tandem Computers, Inc.'s quest to broaden its market beyond the traditional boundaries of on-line transaction processing took a new turn last month with the announcement of a client/server strategy in which Tandem machines are the "back-end" database server.

The firm has forged a series of partnerships in hope of providing client/server connectivity to many personal computers and workstations. Among the partners are Oracle Corp., Borland International, Inc., JYACC, Inc., Neuron Data, Inc. and SQ Software, Inc. Building on gateway technology licensed from Sybase, Inc., Tandem developed an SQL Server Gateway to link PC "clients" with the Tandem database server.

Tandem also said Amstel Systems 200C, a provider of software for distributed PCs, would adapt its Network Navigator products to Tandem systems.

This client/server concept dovetails with earlier company

statements about a software tools strategy to tie Tandem's proprietary Guardian operating system to open systems, such as Unix.

However, customers have yet to share Tandem's vision, according to recent interviews, because those users are accustomed to having their Tandem machines act as transaction workhorses.

Even without a client/server strategy, data stored in Tandem's Nonstop SQL relational database is relatively easy to access, users said. "We can code an SQL query and throw up screens very easily from a terminal," said Dennis Barber, who manages software development at Federal Express Corp.'s Colorado Springs data center. Transient data on misplaced packages in

Feder's worldwide airport stations is stored for a few days, then purged from the Nonstop SQL database. If data is to be stored permanently, it is moved to an IBM mainframe at Feder headquarters in Memphis.

However, Tandem would like its installed base of thousands of Tandem sites to start thinking of their Nonstop SQL systems as workhorses holding vital business data. That way, "client" PCs or workstations could branch off against the SQL-based database, searching for patterns in the day-to-day data.

*Continued on page 30*

## Getting together

*Tandem has established a string of partnerships of late, hoping to build a client/server architecture based on its partners' tools.*

### Gateways:

• Oracle's SQL\*Connect and SQL\*Net provide connectivity with Oracle 6.0.

• Tandem's SQL Server Gateway was designed around Sybase, Inc.'s SQL Server and connects PC clients with SQL back ends.

### Clients:

• Borland's Paradox 3.5 and Paradox SQL Link 1.1 provide database connections between the desktop and hosts.

• Cornerstone Software, Inc.'s Remote Server Call software provides a programming interface with both MS-DOS- and OS/2-based personal computers.

### Tools:

• Caseworks, Inc. is supplying graphical user interface support for application developers.

• JYACC's JAM is an applications development tool for relational DBMSs.

• Neuron Data's Nexpert Object acts as an expert systems development tool.

• SQ Software's SQR acts as a structured query report writer.



## CAD/CAM field shows demand for openness

BY MARTYAN JOHNSON  
OF STAFF

CAMBRIDGE, Mass. — IBM, Intergraph Corp. and the Computerization subsidiary of Prime Computer, Inc. all felt the underdog of the economic tide this past year in computer-aided design and manufacturing (CAD/CAM) and computer-aided engineering (CAE) sales — a \$7.3 billion market they control with nearly 60% of the business.

A study from Datasat, Inc., based here, shows that product transitions, dwindling hardware prices and the recession conspired to slow industrywide growth in CAD/CAM to 5% during the past year.

Yet while the market leaders were hobbled with paltry growth rates as low as 2%, the "growth leaders" — such as Hewlett-Packard Co., Autodesk, Inc. and McDonnell Douglas Corp. — all flourished with sales increases of 20% or more, in part because of

their break from proprietary platforms.

"This industry is going through a very major restructuring," said Charles Foundryer, president of market research firm Datasat. "There is a group of [end-user] companies out there that really want software only if it is available on multiple platforms. No one wants to pay a premium for the platform anymore."

HP, for example, is porting its key mechanical design software products to Unix-based Sun Microsystems, Inc. Sparcstations, slated to ship early this year. That broadening of platform choices should spur further growth for HP, whose revenues surged 20% in 1991 to make it one of the fastest growing companies among the technical design vendors, according to Datasat.

Autodesk's AutoCAD software, the most widely used CAD system in the world, showed

"resounding success" with its Unix versions of the product, Datasat noted. In terms of revenue growth, Autodesk has led the industry with 23% growth in 1991.

McDonnell Douglas in St. Louis managed to glide over the industry slow spots with revenue from its Unigraphics business growing 20% in 1991. Customers seemed even more confident of the product, the Datasat survey found, since McDonnell Douglas agreed last August to sell its CAD/CAM business to Electronic Data Systems Corp.

IBM, on the other hand, saw its revenue growth slowed to 6% on forecast sales of \$2.19 billion. The computer giant is completing its product transition from mainframe-based CAD/CAM/CAE systems to workstation-based software on the RISC System/6000 line of Unix workstations and servers.

Mainframes and their system management capabilities will

continue to play a critical role, however, as engineering data repositories, the report noted.

With the November 1991 CAD/CAM partnership between IBM's Cadam, Inc. and Paris-based Dassault Systems, IBM is now marketing Cadam products for low-end desktop systems and Dassault's Catia software for mainframes and workstations. The new coordi-

nated efforts should dispel some of the uncertainty users have felt about the future of both product lines, Foundryer said.

Most endangered in the CAD/CAM market appears to be Intergraph in Huntsville, Ala. Datasat's survey found Intergraph users less than satisfied with the proprietary Clipper line of workstations — judging them too slow, too expensive and too far behind major competitors, Foundryer said.

Although Intergraph is now porting its Microstation and I/EMS products to Sun workstations, the majority of its mechanical business will remain on Clipper in 1992.

"If its Clipper upgrade is late, or if disgruntled users start a stampede to Sun-based systems, the company could be in for some tough times in the coming years," Foundryer cautioned.

Bruderer, an expert in distribution channels through independent resellers and systems integrators is emerging as a clear trend for the '90s, according to Datasat. Computerization already offers all of its CAD/CAM/CAE, data management and geographic information system software through those channels.

### Leaders hurting

*In a depressed manufacturing economy, the CAD/CAM/CAE market is expected to reach only 5% growth in 1991 on forecast revenue of \$7.3 billion*

1991 CAD/CAM/CAE revenue (in millions)	
IBM	\$2,182
Intergraph	\$1,193
Computerization	\$971
HP	\$845
Mentor Graphics	\$392
McDonnell Douglas	\$350
Autodesk	\$285
Cadence	\$234
Schlenberger CAD/CAM	\$146
Valid	\$124

Source: Datasat, Inc.

CV Chart: Michael Saper

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*PC Magazine* also singled out the fast, sharp IBM LaserPrinter 10 for an Editors' Choice award, citing "the fastest PostScript® graphics we've ever seen from a desktop laser printer," and praising its high-resolution, optional "true 600-dpi output—no marketing doublespeak or technical gimmickry."

They also described it as "bristling with paper-handling options."

And value? The IBM LaserPrinter 10 "equals the LaserJet III...on list price, and moves ahead on...resolution, speed, and paper handling."

High praise indeed, especially for a new product from a company less than a year old: Lexmark International, created from a business unit of IBM to develop, manufacture and distribute IBM personal printers, typewriters, keyboards and related supplies.

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## THE NEW IBM LASERPRINTERS. PAGES AHEAD.

# Santa Fe keeps high-tech eye on trains

## ON SITE

BY ELLIS BUCKER  
CW STAFF

SCHAUMBURG, Ill. — On a slick track in a small New Mexico town, a Santa Fe Railroad freight train derailed.

The following morning, the 60-ft-wide computerized ramp that shows the type, status and location of the 250 trains that start across Santa Fe's 10,650 miles of track every day is still flecked with yellow and red flags, indicating rerouted trains that are behind schedule.

More remarkably, before this highly computerized system operations center started on Oct. 1, Santa Fe controllers here used a giant magnet board to monitor the whereabouts of trains by drawing data from a mainframe

and personal computers.

"The board had no historical reporting or management reports," explained T. J. Lewis, information systems manager at the railroad's data center in Topeka, Kan.

"With automation, we saw the potential to better utilize our fleet."

Driving "the display, which wraps around one end of the room, are six IBM Personal System/2 Model 70s running OS/2 and Easel Corp.'s Easel interface software. With each refresh of the screen, several SQL calls are made on the IBM OS/2 Database Manager database, loading 2,000 to 7,000 rows of data from seven key tables.

The Model 90s, which are connected over a 16M bit/sec. Token Ring local-area network, are able to open up to 100 win-

dows. The windows can show a portion of the big board's map, the arrival and departure times of trains or details of individual trains and engines, including their maintenance histories.

In addition, one of the Model 70s periodically accesses the IBM 3090 600J in Topeka to obtain information from an IMS-based maintenance database of 1,700 trains.

One planner said operators now spend 70% of their time on planning, the proportion they used to spend on clerical tasks under the manual system.

Santa Fe planners previously accessed computerized information via 3270-type terminals hooked to the 3090, where train schedules and train maintenance databases reside. "But the planners' principal function, that of tracking trains, wasn't computerized," Lewis said.

The process was labor-intensive, but it worked. In fact, keeping up the speed of the manual process of "sticking little tags on magnets" was a challenge.

"You need to understand,"

Lewis said, "the response-time requirements were tremendous. Those people were used to moving magnets around while they

The future of the systems operation center may include expert systems technology, which would help planners in their task of ordering appropriately sized engines for different trains.

However, this component is at least a year away, Lewis said.

Lewis: Response time requirements "tremendous"



Santa Fe Railroad operations staff monitors train locations

talked on the phone. That was the response time we had to compete with."

Planning for the new operations center began in September 1990; the first iteration of the \$433,000 system was running by Sept. 16, 1991.

noting that the replacement of the magnetic board with workstations was just the first of many projects for his 350-person IS shop.

"We already have 20 outstanding projects for 1992," he said.

## Tool to provide access between AS/400, PS/2

BY SALLY CUSACK  
CW STAFF

NEEDHAM, Mass. — Customers of Marcam Corp., which offers software products to the process manufacturing market using IBM Application System/400 technology, can look forward to a new cooperative processing software tool early next spring.

Slated to be announced in April 1992, Prism/CP is a graphical user interface and extension to Marcam's Prism business planning and control system.

Using Prism/CP, users will be able to share information and data between the AS/400 and an IBM Personal System/2.

Ernie Hillemeier, computer-integrated manufacturing manager at Iams Co., a privately held, premium pet food manufacturer based in Dayton, Ohio, said the company plans to install Prism/CP when it becomes available.

Having seen product demonstrations and attended seminars, Hillemeier said he is confident that the software's common user interface will enable department supervisors to take advantage of Prism data residing on the mid-range without having to learn the more complex commands.

Iams is implementing Prism on an IBM AS/400 Model 870 for activity-based costing and

planning. The Prism software installation began in March. Hillemeier predicted that all the modules will be up and running by 1993.

The company already uses OS/2-based personal computers, with Easel Corp.'s Easel-based applications for bar coding in its finished-goods area. Hillemeier said users are pleased with the interface.

### Manufacturing benefit

Another benefit of Prism/CP, according to Hillemeier, is that it was designed on IBM's OS/2 as well as Presentation Manager and Easel software platforms — all which Iams said are beneficial to manufacturing applications.

"Prism/CP really pays attention to IBM's [Systems Application Architecture] strategy by allowing users to talk to the AS/400 while running applications in real time," he said.

"You don't have to stop one session to start another."

Prism/CP uses IBM's standards for Common User Access, which defines guidelines for user windows to Prism. The interface includes color windows, action bars, pull-down menus, pop-up Help and icons.

Pricing for Prism/CP will start in the \$10,000 to \$20,000 range and will vary depending on hardware configuration.

## Group hopes Unix will lure members

BY JOHANNA AMBROSIO  
CW STAFF

A securities industry association is hoping to attract new business by completely revamping its computer-based testing system.

The National Association of Securities Dealers (NASD), based in Rockville, Md., calls itself the nation's largest self-regulatory securities organization, with 5,400 firms and 415,000 professionals registered in it. NASD operates four markets, including the NASDAQ, and tests and certifies brokers.

The securities industry was among the first to feel the recession, and NASD's testing business has been no exception. In 1990, the 54 testing centers administered 837,000 hours of tests to 270,000 students; the estimated figures for 1991 are 815,000 and 266,000, respectively.

NASD hopes to turn that around and plans to attract other industries to its testing centers by installing a new Unix-based computer system. "We plan to increase the number of test hours by three to four times by 1996," said Jack Samurias, vice president of information systems at NASD. About 85% of the business is accounted for by securities dealers, a percentage that he said he sees decreasing over time. "We can use [the new system] to attract other testing organizations for our system and for our centers," Samurias said.

The new system, called Proctor, based on Informa Software, Inc. database management software, will run on Sun Microsystems, Inc. workstations and will allow students to take their exams on personal computers linked to the Sun.

NASD is writing the Proctor applications software in-house but is subcontracting out some of the work. ERI, a systems integrator in Hauppauge, N.Y., will put the pieces together, test the system and deliver it to all the testing centers. No one is in full production by Sept. 1.

"I've wanted to write the software to control our own destiny," Samurias explained. The existing turnkey testing system — Plato — cannot be altered. NASD plans to tout its new software as a selling point to potential customers, he said. Customers will now be able to use their own software on the testing center computers.

Plato was developed originally as a training system by Control Data Corp. (CDC) and subsequently sold by CDC to The Roche Organization. NASD has had Plato installed for approximately six years.

Not only is the older system inflexible, but it is old. "It's based on CDC-730s, which they don't even make anymore," Sa-

marias said. "Plato has been very good to us, but it was time for a technology change." He said NASD is revisiting all its technology decisions, including its Unisys Corp. and Tandem Computers, Inc. mainframes.

The new testing system is stand-alone, with no links to the mainframe. Proctor is based on

Plato's general outline of test development and presentation but adds new functionality — particularly in the areas of center and network management. It incorporates around 60 Sun Sparcstations, some X terminals for staff use in schools, e-mail and Intel Corp.

80286-based computers on which to administer the tests. Plans are to upgrade the PCs soon, Samurias said.

Ultimately, the new hardware will enable the next step: so-called adaptive testing. With this technique, the test modifies itself depending on the ability of the person taking the test. The computer presents introductory questions to determine the person's level, then presents a series of questions. The computer keeps adapting the questions to the person.

"To do that, you need the whole database to reside on the workstation because of response time issues," Samurias said.



## SOFTWARE SHORTS

## Real-time tools added

Digital Equipment Corp. recently rolled out more than a dozen real-time products to complement existing offerings on both its Unix-based Ultrix and proprietary VAX/VMS environments. DEC incorporated the Pnix 1003.4 industry standard for real-time applications into its VAX/VMS software environment for VAX/VMS, and it added real-time extensions to the Open Software Foundation's OSF/1 Unix operating system.

Pyramid Technology Corp. has formed a database division to promote the use of Pyramid machines as high-performance platforms for relational database applications. Pyramid's move parallels a similar one at competitor Sequent Computer Systems, Inc. in Beaverton, Ore., which formed a database division earlier this year. Pyramid will work with the major relational database management system vendors, including Oracle Corp., Sybase, Inc., Informix Software, Inc., Ash Computer Systems, Inc.'s Ingres Products Division and others to optimize database software for use on Pyramid's multiprocessor computers. Pyramid also unwrapped Pyramid Database Fastpak, a package of software products that will address the twin problems of memory contention and I/O bottlenecks that slow the performance of Unix databases. Database Fastpak, which is available immediately, ranges in price from \$10,000 to \$47,500.

Uniface Corp. and Hewlett-Packard Co. said they will integrate the Uniface applications development environment with HP's MPE/IX operating system. Users will be able to build applications that allow transparent access to data in HP's Alliance/SQL and TurboImage databases and third-party relational databases.

Oracle recently said that it will support Intel Corp.'s Intel 386 Family Binary Compatibility Specification 2 (IBCS2) standard in Version 6.0 and Version 7.0 of its Oracle relational database products. The Intel standard is supported on many Unix System V Release 3 and System V Release 4 desktop machines, including Compaq Computer Corp.'s Systempro, NCR Corp.'s 3000 series and computers from The Santa Cruz Operation. Oracle is pricing a single-user copy of its Oracle 6.0 RDBMS at \$1,700. It will be released on floppy disks and tape cartridges. Oracle also plans to ship the software on compact disc/read-only memory media in 1992.

## Tandem offers new strategy

CONTINUED FROM PAGE 25

"Tandem is working very hard to get a bigger and bigger chunk of the back-end database business," said Roy Schulte, a senior software analyst at Gartner Group, Inc., based in Stamford, Conn. Tandem may even try to position itself against Teradata Corp. — recently acquired by AT&T's NCR Corp. — since Teradata database machines also use SQL access methods, according to Schulte. Both Tandem and Teradata machines are based on a parallel-processing architecture.

In an attempt to overcome its proprietary system label, Tandem helped to found the 2-year-old SQL Access Group,

which promotes a single industry standard for the SQL language that would unite all relational databases. To enter the open systems market, Tandem also developed a fault-tolerant version of Unix for its 1-year-old Integrity series of Unix computers.

Just how "open" or "closed" Tandem systems are depends, in part, on your point of view, says Richard Luebke, manager of client/server marketing at Tandem. "A person developing a pure database application might see a need for [the] SQL [language], in which case the Tandem Guardian platform is just as open as

any other platform," Luebke said.

Whether longtime Tandem users will embrace the new client/server strategy remains to be seen. But some have said it could well fit into their long-term plans.

"The client/server environment they're talking about is of interest to us," said Philip Seeley, vice president of MIS at Consolidated Freightways, Inc. The company maintains a nationwide image-processing system that tracks shipment orders and then stores them on optical disc at a central site in Portland, Ore. "All of our indices [for the image system] are in SQL databases," Seeley said. "So we could do some [SQL-based] client/server applications with little difficulty. There are some applications like that in our long-term plan."

## Other Financial Software Rely Heavily on this Hardware...



# Downsizing brings unexpected bonus

Seed firm boosts software integration substantially after putting mainframe out to pasture

BY SALLY CUSACK  
OF STAFF

**MINNEAPOLIS** — When one of the world's largest agricultural seed producers and distributors, Northrup King Co., downsized from an IBM mainframe to a midrange system, it found an unexpected gain.

While the company expected substantial benefits from the resulting software integration, it was surprised by the capabilities of the menu management system,

Northrup King, owned by Sandoz Ltd., develops, produces, and markets hybrid seed corn, soybeans, alfalfa and sorghum as well as several other farm seed products.

The publicly held company employs more than 500 people worldwide and operates 20 research sites throughout the world.

The company decided in July 1990 to replace an IBM 4381 with an IBM Application System/400 Model D80.



The 4381 was responsible for all accounting and associated applications, but according to Brad Larson, project manager for financial systems at Northrup King, the integration capabilities just weren't there on the 4381.

"We have some uniqueness in the way we handle orders, such as producing compilations of farmers' seed orders for our dealers," said Larson, adding that the company has no direct sales

force — it works directly through dealer organizations.

The firm determined that the new software implementation on the AS/400 must serve to produce market information and offer data to help better position the product while servicing the dealer organizations.

There are between 150 and 200 people linked into the AS/400 via terminals and personal computers on an Ethernet network. With 60% of these users at remote site locations, data integration and delivery on products and inventory were important issues.

To that end, Northrup selected Software 2000, Inc.'s General Ledger and Accounts Payable programs to handle financial applications and Marcom Corp.'s Prism package for product inventory and sales order management systems.

The integration between Software 2000 and Marcom software was completed very soon after the products were delivered, Larson said, adding that one of the major benefits in the whole transition process has been the Application Manager 2000 product that Software 2000 supplies with its products.

By providing a single menu management and security tool interface, the application manager gives all the software systems on the AS/400 the same "touch and feel" to the end-user community, he said.

"It was very easy to integrate all the software under the application manager, and security access is controlled by menu item," Larson said. "It is a very flexible system — it only takes about five minutes

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to add any menu item."

Northrup King had also decided to develop some nonpackaged applications in-house to address some specific dealer information needs.

In conjunction with Coopers & Lybrand, Northrup King elected to use Sybase, a computer-aided software engineering tool from Sybase, Inc. for design and development.

Larson characterized the Sybase product as "quite straightforward" in its programming approach, and he said the Sybase-developed applications are also integrated into the Application Manager 2000 menu management system.

So far, the implementation has gone well. "We've basically come through with just some minor hitches and bumps," Larson said, adding that he expects everything to be completed by the end of this year or early next year.

One of the biggest advantages with the AS/400 platform is the data access and query capabilities that the environment provides, Larson said.

"We can move some of the data query tasks to the end user and away from MIS. And more and more questions that were directed to MIS can now be resolved at the user level."

## NEW PRODUCTS — SOFTWARE

## Development tools

Fortran-List for VMS, a Fortran static source-code analysis tool from Information Processing Techniques Corp., has been updated.

Fortran-List now includes support for Digital Equipment Corp.'s VAX DBMS database application code. The upgraded version makes it unnecessary to run database management system code through a preprocessor before using Fortran-List. The analysis process is streamlined, the company reported.

Pricing is \$3,900 per user.  
Information Processing Techniques

1096 E. Meadow Circle  
Palo Alto, Calif. 94303  
(415) 494-7500

XDB Systems, Inc. has started shipping XDB-Workbench Version 2.41.

The product allows Cobol programmers to develop and run IBM DB2 applications on personal computers. The new release offers more complete DB2 compatibility along with referential integrity clauses, date and time functions, table functions and other enhancements.

XDB-Workbench 2.41 supports both DOS and OS/2 and is priced at \$1,500.

XDB Systems  
14700 Sweetzer Lane

Laurel, Md. 20707  
(301) 317-6800

## System software

Pencom Software has upgraded its Co-Xist software package for Next, Inc. workstations.

With Co-Xist, Next users can run X Window System software. Release 2.1.1 provides full client/server support for X Window Version X11R4. Color support and cut-and-paste features have also been added.

Pricing for the software starts at \$249.

Pencom Software  
Suite 300  
9050 Capital of Texas Highway N.  
Austin, Texas 78759

(512) 343-1111

## Unix

Interactive Development Environments, Inc. has ported its Software through Pictures 4.2 development tools to The Santa Cruz Operation's SCO Open Desktop.

Software through Pictures is a multi-tier, integrated, computer-aided software development environment.

The SCO Open Desktop version costs between \$5,000 and \$21,000, depending on hardware platform.

Interactive Development

Environments  
595 Market St.  
San Francisco, Calif. 94105  
(415) 543-0900

## HARDWARE

## Processors

Radstone Technology Corp. has announced a VME module for image and graphics processing.

The Visionmaster handles both computer-generated and live images. It offers a programmable video format and displays images with up to 2,048-by-1,024-pixel resolution. It includes 4M bytes of memory. Supported functions include line drawing, filtering and edge detection.

Visionmaster is priced at \$14,950.

Radstone Technology  
20 Craig Road  
Montvale, N.J. 07645  
(201) 391-2700

## I/O devices

Tektronix, Inc. has introduced a color X terminal with a small footprint.

The Tekpress XP26 features a 17-in. display with 1,152-by-900-pixel resolution, 28mm dot pitch and a 72Hz refresh rate. It is priced at \$4,750.

Tektronix  
26600 S.W. Fwy.  
Wilsonville, Ore. 97070  
(501) 685-2838



The Viewstore board offers detailed image examination

A high-capacity frame buffer board has been developed by Viewgraphics, Inc.

The Viewstore board provides workstations with up to 384M bytes of 24-bit color image storage, which can hold 372 standard TV images or more than 12 seconds of video output. The board also offers a magnification feature for image examination during live-video playback.

The VME-based board is priced from \$25,000 for a 96M-byte version to \$49,000 for the 384M-byte model.

Viewgraphics  
1185 Terra Bella Ave.  
Mountain View, Calif. 94043  
(415) 903-4900



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6. 486SX/33	33	33	33	33
7. 486SX/33	33	33	33	33
8. 486SX/33	33	33	33	33
9. 486SX/33	33	33	33	33
10. 486SX/33	33	33	33	33
11. 486SX/33	33	33	33	33
12. 486SX/33	33	33	33	33
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# PCs & WORKSTATIONS

## Hyundai hits road with laptops; shifts to second part of project

BY MICHAEL FITZGERALD  
CW STAFF

FOUNTAIN VALLEY, Calif. — At Hyundai Motor America, a two-year push to use laptops is heading into Phase 2. Hyundai finished the final pieces of Phase 1 about two months ago and has outfitted all 60 of its dealer representatives with Compaq Computer Corp. LTE 286 notebooks running a variety of software. The initial payoff was solid: Hyundai's regions report a re-

duced work load on central administrative staffs and less need to fly representatives in for meetings, and some representatives say they have seen phone bills drop by as much as \$500 a month, thanks to electronic mail. Hyundai's representatives, or field travelers, as they are called, also save time in meetings by being able to pinpoint specific numbers in spreadsheets, rather than searching through reams of paper, as they did before. Now, field travelers can call the shots in improving the way

they use laptops. "We're trying to push empowerment, give them more information so they can make more decisions when they're in with the dealers," said Carrie M. Ulvestad, Hyundai's national manager of dealer communications. Hyundai has created a Field Traveler Council consisting of a parts and service representative and a district sales manager from each of its four regions. Also on the council are Ulvestad; Bette D. King, Hyundai's information



Hyundai's Ulvestad helped firm shift gears with laptops

center manager; Nancy R. Bethel, a senior office systems analyst; and two field liaisons

from the national office.

First on the list is improved  
Continued on page 44

## Modular software poised to gain foothold this year

BY CAROL HILDEBRAND  
CW STAFF

They say that breaking up is hard to do, but the lure of modularity in software is that it is just the opposite.

Modular software—or an application that comes in several segments that can be removed and either run alone, added to another application or hooked into other applications via open system interfaces—has been gaining ground recently, particularly as applications start to exploit Microsoft Corp.'s Object Linking and Embedding (OLE) and Dynamic Data Exchange (DDE) functions.

In the Windows world, such applications are just beginning to hit the shelves, and analysts pre-



CW Chart: Marie Haines

dicted that it will take until late 1992 for modularity—in the form of support for DDE or OLE—to become a definitive feature

for a piece of software. "Once we get a critical mass of pieces, users will get a handle on it and be able to combine them to create more interesting applications," said Rich Bader, contributing editor at "PC Letter."

Jesse Berst, editor of "Windows Watcher," said developing modular software will not only decrease time to market but will enable third-party developers to more easily piggyback their applications onto larger core packages. He added that the mix-and-match option will be a boon to users. Once modularity gains ground,

he said, "If you like one graphics package's slide sorter but would rather have Christmas's charting module, you can stick it in."

"There is clearly user interest in the concept of modularity, but the definition of it is variable. There's very little in the marketplace, and people are still trying to figure out what it means," Bader noted.

According to Matt Edelstein, a beta-test user for Lotus Development Corp.'s Ami Professional word processor at Information Projects Group in Herndon, Va., "I always thought that the basic kernel of a word processor should be entry-level, and you could then sell modular add-ons" as a user desires more sophisticated features.

Mary Lou McPherson, an in-

formation technology specialist at Michigan State University, said she sees it as applications working together seamlessly as vendors reach more of a collaborative stage. "As vendors move toward the center, there will be more overlapping," she said, citing, for example, Aldus Corp.'s Pagemaker, which can grab information from a database when needed.

Vendors queried at a seminar on applications in the '90s at November's PC Expo in Chicago expressed varying degrees of willingness to break an application down modularly. While Lotus said that its current method of distribution would make it difficult to break apart an application, other companies, such as Macromind, Inc. and Borland International, Inc., said that more basic applications with optional add-ons were in the works.

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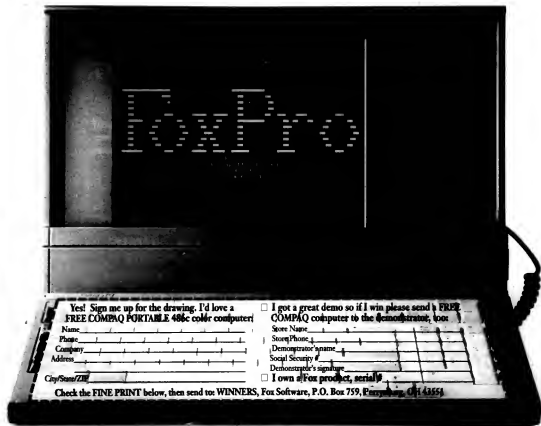
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**E N A D V A N T A G E.**

# Watch the Fox, win this box.





# Insurer sees future in imaging strategy

Central Life Assurance implements paperless work-flow arrangement in accounts department

## ON SITE

BY JAMES DALY  
CW STAFF

DES MOINES, Iowa — Hundreds of miles from the nearest ocean, underwriters at the \$2.2 billion Central Life Assurance Co. (CLA) were drowning — in paper, that is.

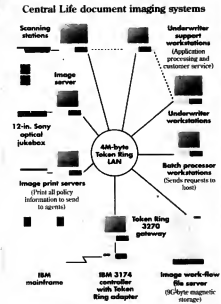
But rather than reach for the life preserver it was tossed, the insurer waited to find something that would help keep it afloat in the long term.

During the next few weeks, after 96 years of scribbling out new insurance applications by hand, CLA will complete work on a paperless work-flow arrangement in its new accounts department that will finally give overstuffed filing cabinets a breather. If all goes smoothly, it could rapidly expand to the far corners of the organization.

### Slow procedures

Like many offices, CLA uses data entry clerks to enter information from handwritten documents into a data processing system. And like many organizations seduced by the promise of the paperless office, the problems with that old system were myriad: File cabinets take up valuable floor space, misfiling can cause a document to be at any given moment," said Gary Rasmussen, CLA's business analyst.

Oddly were that the problem was going to get worse before it got better. Business has been good at CLA, which now operates in 44 states and handles more than \$18 billion in individual



Source: MetLife Information Systems, Inc.

life insurance. The amount of paperwork appeared to be heading in one direction: up.

CLA plotted out an advanced imaging system for more than a year and finally decided to build a system that used a cooperative processing approach to integrate data processing, text management and document image processing. Receiving information, data entry, underwriting and policy preparation was all to be tightly linked.

The first proposed solution was suggested by folks from

IBM. It called for running an imaging system on CLA's Application System/400 and OS/2. It was rejected as too costly.

CLA officials instead opted for a desktop system powered by MetLife Information Systems, Inc.'s Metaview software, a high-level, object-driven language for developing imaging applications in a cooperative processing environment.

The Metaview system involved less processing power and expense. "Metaview didn't require our AS/400 at all," said

to its executives in a timely fashion, Barrett said.

The group put together a task force last year. Some of the initial decisions were easy. For instance, the department selected MS-DOS as its platform because it wanted a network of personal computers, and MS-DOS is the standard desktop operating environment at the insurance company, Barrett said.

### Third-party chosen

The task force began meeting on a weekly basis to determine what CP&S's users needed. It looked at third-party packages for facilities management, but it could not find an off-the-shelf offering that suited users' needs.

The next step, then, was to find software that would allow them to create their own sys-

George Eldridge, senior vice president of corporate services. Eldridge said the ability to circumvent the AS/400 saved "hundreds of thousands of dollars."

### First step

The data-capture process begins when insurance brokers send applications to CLA. The application is scanned at the mail room, and the images are indexed and checked for quality. The images are stored magnetically at first and then transferred to 12-in. optical disc in a Sony Corp. 50-disk jukebox.

The images are accessed via a fiber-optic backbone from a Net-frame NF 400. Operators use about 60 Intel Corp. 80386-based IBM Personal System/2s. Files are kept in magnetic storage while active, or about eight weeks. They are then archived on optical disc, Rasmussen said.

Up to 700 pages a day are then routed to the appropriate work queues. Correspondence goes to a mail queue, where it is related to a file by policy number, and the network server provides any associated documents.

Underwriting files contain all information related to a specific account: financial reports, medical information, photographs and so on. When a file is complete, underwriters review all the documents and then approve or deny the application.

Although still in its infancy, the new system has already affected other areas of CLA, particularly customer service. "We have instant status reports, which saves hours of searching," Rasmussen said. "We call up files while on the phone. Returning calls is a thing of the past."

If the system lives up to expectations, it will be expanded to include added functions.

The group selected Clipper, a software development system designed by Nantucket Corp. in Los Angeles.

The Clipper software was recommended by an outside consultant and has been used in other departments at Met Life. Barrett said it allows for quick and easy development of applications and added that its advantage is that it lets the group tailor an application to "exactly the way you want it."

Barrett said the application work was being done by one programmer while another worked on interfaces to hook the software to the mainframe databases.

The system is called the Facilities Administration System and includes such modules as contract and budget management.

## PC & WORKSTATION SHORTS

# Vendors collaborate on security

Datamedia Corp. and Micronix, Inc. have signed an agreement to work together on developing a new generation of security and control products for personal computing environments. The companies have targeted early 1992 for shipment of the first hardware and software components.

Freemont, Calif.-based Everex Systems, Inc. recently began shipping its 5.2-pound Tempo Carrier notebook computer, which it claims is the lightest notebook to have both an internal floppy and a hard drive as well as the first to use an integrated pointing device called the Keymouse. Tempo Carrier is based on Intel Corp.'s 20-MHz 80386SX chip and features an internal floppy drive, 2M bytes of random-access memory and a 40M- or 80M-byte hard disk. Pricing starts at \$2,795.

Computer Associates International, Inc. has released a new version, 3.1, of its ACCPAC BPI account series for the personal computer. Enhancements include the ability to define benefits, deductions and payroll taxes in a variety of situations and support for benefit plans that allow employees to set aside pretax funds for medical and dependent care. ACCPAC BPI 3.1 is available now for \$395.

AT&T's NCR Corp. division announced recently that it would cut prices on the Safari NSX/20 laptop with a 40M-byte hard drive from \$4,749 to \$4,199. It will also expand distribution to include NCR's resellers as well as AT&T's existing base of resellers.

Twinnhead Corp., a Milpitas, Calif.-based subsidiary of a Taiwanese clone maker, recently said that it will provide on-site warranty service for its Twinnhead portables through TRW, Inc.'s Customer Service Division depot service centers.

# Met Life finds dividend in automation system

BY ROSEMARY HAMILTON  
CW STAFF

All it took was Microsoft Corp.'s MS-DOS and an application development tool, and the Company Property and Services (CP&S) department at Metropolitan Life Insurance Co. was up and running.

While other segments of the insurance company are automated, this department has long gotten by with only a few personal computers and no on-line management of its activities.

The group handles 17 prop-

erties, totaling about 6.2 million sq ft, for the insurance company. That includes management of contracts, security and an application development tool, and the Company Property and Services (CP&S) department at Metropolitan Life Insurance Co. was up and running.

"It's not a division that puts money into the company," said Peter Barrett, a project manager at Met Life who helped automate CP&S. "The ones that are most cost centers are the last in the pecking order, if you will."

The department may not be a high priority, but it needed a system to better manage the building operations and deliver data



# Microsoft's Visual Basic simple alternative to C

**Technology Analysis** — A roundup of expert opinions about new products. Summaries written by New Products Writer Derek Slater.

**M**icrosoft Corp. teaches the old dog a whole new repertoire with Visual Basic, which offers a graphical programming environment for developing Windows 3.0 applications in the Basic language. **Ease of use:** Reviewers said Visual Basic greatly simplifies development. According to *Byte* magazine, while Visual Basic is not difficult to use, it does require the programmer to learn a new set of concepts and methods. On-line Help is extensive.

**Environment:** The programming environment is genuinely graphical. Visual Basic develops event-driven programs.

**Tools/extensions:** A tool palette offers quick access to programming functions. Windows functions, including Dynamic Data Exchange, Clipboard and Printer, are directly supported, although Windows' Multiple Document Interface is not.

**Debugging:** Debugging is fully integrated but can be complicated in larger projects, reviewers said. An incremental compiler helps pinpoint errors at the time they are written.

**Value:** At \$199, Visual Basic is an excellent value and a strong alternative to the C language.

## Microsoft's Visual Basic 1.0

Reviews	Ease of use	Environment	Tools/Extensions	Debugging	Value	Overall
<i>Byte</i> 10/93	Very good	Excellent	Excellent	Very good	Excellent	5.0
<i>PC Week</i> 10/16/93	Not difficult, but complex	Good approach requires learning	Visually select interface objects	Easy	Excellent alternative to C	Easy application development
<i>PC Magazine</i> 10/15/93	Simple and easy	Excellent	Excellent Windows 3.0 support	Integrated	Excellent support for programmers	Excellent tool
<i>PC Computing</i> 7/93	Select actions from drop-down lists	Object-oriented environment	Excellent	NC	Obvious choice	Most important Windows product
<b>Users</b>						
John Peterson, Consultant/Eds. Inc.	■	■	■	■	■	Extremely easy to learn
Stephen McCabe, CTV Systems	■	■	■	■	■	A month's work in 12 hours
Steve Smith, Microsoft South European, Inc.	■	■	■	■	■	Very easy, BASIC environment
<b>Analysts</b>						
Chris Lafferty, Computer Intelligence/Industry	■	■	■	■	■	Best development environment
Robert Chalmers, Strategic Information Services Group	■	■	■	■	■	Going to make

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC, No comment. \*Deficient ratings based on 1 to 10 scale.

## Vendor financial ratings

Analysts	Short-term performance	Long-term viability
Peter Reagen, Bakerman, Hughes & Co.	■	■
W. Christopher Mortenson, Alex, Brewer & Sons, Inc.	■	■

Microsoft Corp., based in Redmond, Wash., reported 1991 revenue of \$200.5 million, a 57% increase over 1990, and profit of \$54 million, a 64% increase over 1990.

## Microsoft responds

### New! Bashear, product manager:

**Tools/extensions:** Users can operate the custom controls feature to create a tool that plugs seamlessly into Visual Basic. We have a huge number of third-party vendors creating libraries and tools. It is a straightforward process for us to use the same procedure to add new features to Visual Basic without dramatically restructuring the product.

# Realizer: Strong, competitive tool from Within

## Within Technologies' Realizer 1.0

Reviews	Ease of use	Environment	Tools/Extensions	Debugging	Value	Overall
<i>Byte</i> 10/93	Good	Strong traditional	Very good	Very good	Good	6.5
<i>PC Week</i> 10/16/93	Requires more knowledge	Not a true visual tool	Extensive array	Powerful	Excellent alternative to C	Many of functions not power
<i>PC Magazine</i> 10/15/93	Easy to design graphically	Does not have graphical feel	Extensive and easy	Effective and easy	NC	Terrible tool
<i>PC Computing</i> 10/15/93	Straightforward	More traditional	Extensively powerful features	Straightforward	NC	Programmer breakthrough
<b>Users</b>						
Michael Chalmers, Tandem Computers, Inc.	■	■	■	■	■	Easy to use, very productive
Paul Hickert, Perry Software Systems	■	■	■	■	■	Superb tool
Larry Ladd, Hughes Aircraft Co.	■	■	■	■	■	Extremely high level of functionality
<b>Analysts</b>						
Richard Duff, Insight, Inc.	■	■	■	■	■	Very valuable for programming
Robert Chalmers, Strategic Information Services Group	■	■	■	■	■	Visually easy tool you need

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC, No comment. \*Deficient ratings based on 1 to 10 scale.

## Vendor financial information

Within Technologies, Inc. is a privately held company incorporated in 1990. It is based in Mount Laurel, N.J., has approximately 25 employees and is profitable, according to its company. Realizer is Within Technologies' first product.

## Within responds

**Michael Hyman, vice president of product marketing:**

**Environment:** We do have graphical tools. The difference is we don't force you to program that way. You can still use standard techniques.

**Tools/extensions:** We will enhance the spreadsheet and chart tools. We also plan to add features that facilitate downsizing database applications.

**W**ithin Technologies, Inc.'s Realizer is a standard version of Basic programming that runs under Windows 3.0. It includes a graphical development tool and an excellent set of libraries. Reviewers described Realizer as a powerful, professional tool.

**Ease of use:** Basic programming techniques transfer easily to Realizer, reviewers said.

**Environment:** Realizer provides a traditional implementation of Basic. Although a graphical development tool — called Formdev — is included, the programming environment is not primarily graphical. *Byte* magazine said Realizer is not yet smoothly integrated within itself.

**Tools/extensions:** Realizer includes strong Programmable Application Tools (or interface objects) for chart, spreadsheet and schedule functions; code libraries are included for other functions, such as communications and statistics. Reviewers said Realizer's tool set is powerful and complete.

**Debugging:** Debugging features are adequate and offer speedy performance.

**Value:** Professional programmers will find Realizer a good value at \$395, reviewers said. It can replace C language for Windows programming, or it might be used for quick applications prototyping.

## Hyundai rides with laptops

CONTINUED FROM PAGE 37

communications facilities, Ulvestad said.

"Basically, they said that if we don't fix the communication problems we have now, they don't want to get any more information than they already have."

Hyundai is looking at a variety of methods to improve communication facilities, including finding 9.6K bit/sec. data modems that will fit into the LTE form factor and putting in a dedicated line at a dealership just for the field traveler, to reduce disruptions of dealer business. Typically, most dealers have dedicated lines for specific needs, such as a fax machine and new communications software.

### Technology in the field

In 1988, Hyundai decided to analyze whether it could gainfully employ technology of any sort for its field travelers and found that it could. So in 1989, Hyundai rolled out notebooks in its central region.

"We didn't go in to try and fit laptops into their jobs," Ulvestad said. She added

**WE DIDN'T GO IN TO try and fit laptops into their jobs.**

CARRIE ULVESTAD  
HYUNDAI

that most representatives carried reams of paper with information, on the off chance they would have to look up something.

"We found a high percentage of their time was spent doing telephone calls [back to the regional offices], and the second time-waster we saw was administrative paperwork," Ulvestad said.

Field travelers must send back reports on each dealer visit, via a typical "route to next person" fashion.

The challenge: Ulvestad and her team faced was increasing the time they could spend meeting with dealers and their effectiveness during that time.

"At the end of the test, the central region's general manager told Hyundai Motor America's executive committee, 'If you try to take these PCs away from my people, I'd have complete motiny. You cannot take these away; we are dependent on them, that's how they do their jobs.'" Hyundai rolled out portables to the rest of its regions, a process it completed in November 1991.

Only the initial phase used SLT models purchased from a Compaq dealer. Some four months into the pilot, the lighter, smaller LTE 286 appeared. Ulvestad said, "we were quite upset" by this, as the company had researched the market before buying. So it moved to leasing to avoid getting caught again.

Installed on the notebooks are Lotus Development Corp.'s Lotus 2.01 spreadsheet, IBM's Displaywrite IV word processor, PS/PC's communications package and compiled versions of Micromin, Inc.'s Rhase 3.0 applications. Hyundai will upgrade to Lotus 3.1 soon and may add a graphics presentation package.

## Bell will pair CPU and bus upgrades

BY MICHAEL FITZGERALD  
CW 1009

VAN NUYS, Calif. — Clone-maker Bell Computer Systems said it would greet the new year with an upgradable personal computer that allows the user to upgrade the bus as well as the CPU.

Bell's line of systems, based on chips from Intel Corp. and Advanced Micro Devices, Inc., will offer processor upgradability from a 25-MHz AMD386SX to an Intel 50-MHz i486DX. It will also give users the ability to see their peripherals run at the CPU speed, rather than the 8-MHz

rate of data transfer permitted by the AT bus.

To do this, Bell's systems will use Santa Clara, Calif.-based Opti, Inc.'s Local/CPU Bus chip set. The catch for users is that existing peripherals do not take advantage of local-bus architectures and will not run faster, although Bell said its systems will have peripherals that will use the Opti system.

Bell expects to ship systems at the end of February. It will not sell CPU upgrades without an Opti chip set but has yet to set pricing for the systems.

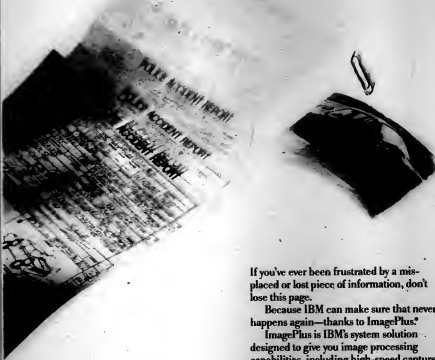
One analyst said the bus system ap-

pears to make sense for users.

"Users will want to get maximum mileage out of an upgrade, performance enhancements and true productivity enhancement, and to the extent that you're limited by the bus, how much does an upgrade give you?" said Richard Zwetchnbaum, senior hardware analyst at International Data Corp. in Framingham, Mass.

A Bell spokesman credited Intel with developing the local-bus concept back in 1988 but said vendors were reluctant to lock themselves into both Intel chips and an Intel architecture.

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(Or pictures)



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## NEW PRODUCTS

## Systems

Altos Computer Systems has announced the first models in its System 4500 modular processor systems line.

System 4500 computers were designed specifically for use with Unix. All systems are based on the Extended Industry Standard Architecture.

A model with an Intel Corp. 20-MHz 1486SX processor costs approximately \$9,400.

Altos Computer Systems  
2641 Orchard Pkwy.  
San Jose, Calif. 95134  
(408) 946-6700

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You can imagine the impact on productivity.

Projects that used to take weeks to close, now can take hours.

## Peripherals

Novadyne Computer Systems, Inc. has created a serial port expansion system for Sun Microsystems, Inc. workstations.

The Novaport Anybus Expander comes in two versions. The desktop model (\$2,995) encompasses four eight-port asynchronous controllers, connecting up to 32 serial devices through one SBus slot.

The desktop model (\$5,995) includes eight eight-port controllers.

Novadyne Computer Systems  
1700 E. St. Andrew Place  
Santa Ana, Calif. 92705  
(714) 566-2000

Seiko Instruments USA, Inc. has developed the Personal Colorpoint color desktop printer.

The 300-dot/in. thermal transfer printer can print a color page in less than two minutes, the company said. It is compatible with personal computers, Apple Computer, Inc. Macintoshes and Unix-based workstations.

Pricing starts at \$3,999. A model with a reduced instruction set computing processor and Adobe Systems, Inc. Postscript compatibility is available for \$4,999.

Seiko Instruments USA  
1130 Ringwood Court  
San Jose, Calif. 95131  
(408) 922-5800

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**IBM**

Radius, Inc. has announced the Precisioncolor Display/19, a multifrequency monitor for personal computers and Apple Computer, Inc. Macintoshes.

The 19-in. display product offers a two-page display with 24-bit color, 31mm dot pitch and a 72-Hz noninterlace refresh rate. It supports up to 16.7 million colors, the company said.

The PC version, which works with the Radius SVGA Multiview graphics card, supports resolutions that range from 320 by 200 pixels to 1,280 by 960 pixels.

The price is \$2,499.  
Radius  
1730 Fortaine Drive  
San Jose, Calif. 95131  
(408) 434-1010

Alacritty Systems, Inc. has begun shipping the Desktop Document Manager (DDM).

The product allows personal computer users running Microsoft Corp.'s Windows to photocopy, fax, store and retrieve electronic documents. The Alacritty DDM consists of a suite of software utilities and an add-in board with a graphics coprocessor and 64K bytes of memory.

The DDM is used in conjunction with a scanner and a laser printer.

According to the company, the DDM also speeds printing from any Windows application by as much as 10 times.

The product costs \$1,995.  
Alacritty Systems  
433 Newburg Road  
Hackensack, N.J. 07640  
(908) 813-2400

## Storage

Everet Systems, Inc. has announced a 314-in. small computer systems interface tape backup system that provides 560M bytes of storage and 32M byte/min. performance.

The Excel 560 is compatible with industry 44-in. cartridge standards including QIC-121, according to the company. It includes the company's Stage software with menu-driven, file-by-file backup capability.

An internal model with one minicartridge and all necessary cabling costs \$1,579. An external Excel 560 is priced at \$1,729.

Everet Systems  
48431 Millmont Drive  
Fremont, Calif. 94538  
(415) 498-1111

## Development tools

Dolphin Software has created two software packages for use with C language and C++ compilers.

The Dolphin C Toolkit incorporates 225 C language functions pertaining to date, time, string, disk, file and printer functions. It enables users to save values in .EXE files.

The toolkit costs \$149.  
The Far Memory Manager and Debugging Library enables programmers to access most of the 640K bytes of conventional memory. It includes a debugging log that optionally records all far-memory operations, the company said. It is priced at \$99.

The products can be purchased together for \$238.  
Dolphin Software  
48 Shattuck Square #147  
Berkeley, Calif. 94704  
(510) 464-3009

# Everything you need to know about the difference between a Compaq PC with Intelligent Modularity and a merely upgradable PC.

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2. Upgradable video without using an expansion slot	Yes	Yes	No	No	No
3. Separate I/O board for potential enhancements and ease of service	Yes	No	No	No	No
4. 16 levels of security including cable-lock provision	Yes	No	No	No	No
5. System configuration and ID number available in memory and accessible remotely	Yes	No	No	No	Yes
6. Power supply adequate for all expansion cards	200w	150w	145w	220w	194w

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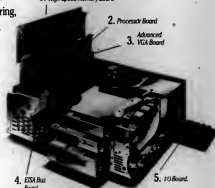
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# NETWORKING

## NETWORK SHORTS NCR offers POS gear

NCR Corp. recently announced a new point-of-sale workstation that can work with a wireless local-area network. Members of the NCR 5100 family occupy half the space of traditional personal computers, according to NCR. The company said up to 11 cables per work area can be eliminated if the device is used with NCR's optional Wireless LAN. The 5100 systems use Intel Corp.'s 386, 16-MHz chip and measure 11 1/4 by 17 by 6 1/4 inches.

Mainlan, Inc. in Dallas said it is shipping a low-end LAN operating system for \$199 per node that includes a network interface card, software and cabling. The LAN, which targets small networks, is said to support MS-DOS and DOS/Windows clients and includes peer-to-peer sharing of DOS and DOS/Windows network applications and electronic mail.

AT&T's E-mail unit has signed an agreement to co-market Unisys Corp.'s Unix V-mosaic electronic data interchange package. AT&T Easylink Services will recommend the Unisys software, called EadAlpha, to customers needing to integrate existing applications with EDI through an open systems platform.

## Telecom managers unsure about SMDS

### ANALYSIS

BY JOANIE M. WEILER  
CW STAFF

Many telecommunications managers have yet to see how Switched Multimegabit Data Service (SMDS) might fit into their wide-area networking schemes. The impasse seems to stem from SMDS' current lack of availability, along with a deficit of marketing moves by local telephone companies to educate users about how SMDS differs from the much-touted frame-relay technology.

"I know what the acronym 'SMDS' stands for, but we have not seen any vendor — and that's a capital A-N-Y — coming to us about it," said Jess Reed, assistant vice president of telecommunications at Geico Corp.,

an insurance firm based in Washington, D.C. Geico is implementing a private frame-relay network.

SMDS is a public-switched wide-area data service slated to start coming out of the regional Bell operating companies in the first quarter of next year at T1 speeds within service regions. According to carrier announcements made this fall, SMDS should be available in about 30 U.S. cities by year's end.

**Making the connection**  
Connecting the pockets of SMDS is a major issue for users having similar characteristics and applications linked to both SMDS and frame relay. The Bell companies are restricted to offering local services and must depend on long-distance carriers to interconnect them in national

and international configurations.

"I understand that SMDS is a local offering, so I'm not sure how that would fit with a national organization such as ours," said Roger Shipbeck, project leader of telecommunications at Hoechst-Celanese Corp., a pharmaceuticals company in Bridgewater, N.J. The firm is deploying a hybrid public/private frame-relay network.

To date, no official announcements have been made by long-distance carriers about supporting SMDS, although MCI Communications Corp. and AT&T are deploying SMDS-capable switches in their central offices.

Frame relay — a fast, simple form of packet switching — does not have the ubiquity limitation that SMDS currently does. Frame relay is already offered both nationally and internationally by wide-area public carriers

## Throwing the switch Carrier SMDS deployment plans by year-end 1992

Company	Number of cities
Ameritech	Not announced
Bell Atlantic	5-6
Chattanooga	5-6
GTE	3-5
Nynex	Not announced
Pacific Bell	6-7
Southern Bell	No statement, but in trials
US West	9

\*SMDS could reach 30 cities by the end of next year, although it is not yet clear how these islands will be linked.

Source: SMDS Interest Group, January 91  
CW Staff: Michael Sappin

as well as on private networking equipment.

However, the "connectionless" nature of cell-based SMDS may actually suit the local-area network interconnections often cited as the "killer" application for frame relay rather than the SMDS competitor, according to

Continued on page 52

## Users wary of Novell management tool

BY ELISABETH HORWITT  
CW STAFF

PROVO, Utah — Novell, Inc. threw what some users may consider a curveball when it announced its distributed Network management system late last month.

While the product does meet some long-standing user needs, Novell's decision to base it on IBM's OS/2 Version 2.0 is likely to draw some user resistance, according to Tom Wood, senior industry analyst at Business Research Group, a Newton, Mass.-based consultancy.

Novell has been hinting for some time that it would be announcing a graphics-based, inte-

grated management system for distributed Network nodes. "Before, when Novell said it had network management, it really

meant management of a single Network server," Wood said. A network manager at a terminal would need to log on to each server in turn to get information about what was happening on each local-area network, he explained.

In contrast, Novell's Network Management Map is said to track nodes automatically across

multiple Network LANs and display their status on a graphical user interface based on IBM's Presentation Manager. The



product identifies active nodes on the network and "paints a map" depicting those nodes on a corporate-wide network, according to John Edwards, Novell's director of marketing.

If a system fails or its performance degrades, its icon on the screen changes color. Then the administrator can position the mouse over the icon, zoom in to

get more specific information about the ailing node and "take proactive steps, hopefully long before users call," Edwards said.

In addition, the system collects configuration information, such as what version of DOS or IPX a workstation is using or the number of packets it transmits within a certain time period. It then stores the information in a Novell Browse database for later retrieval and analysis, he said.

The above system "sounds very good, particularly when it comes to getting an inventory of devices on the network and a picture of the network's health," said Brian Keller, a network specialist at a major insurance company.

Keller said he also likes the idea of collecting configuration

Continued on page 50

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# Greyhound drives wide-area networking

## ON SITE

BY JOANIE M. WEXLER  
CIVILIAN

DALLAS — The postbureaucracy era at Greyhound Lines, Inc. has seen the bus company economize by scattering its corporate headquarters among several leased-office sites. The move has forced the firm to implement wide-area networks that must be continuously justified to a frugal upper management, senior network analyst Terry Davis said.

The justification process remains ongoing because mainframe-oriented senior managers have trouble understanding the nature of local-area network traffic, which requires more bandwidth than terminal-to-host connections, Davis explained.

Davis said he has a wish list of three key functions that would help him increase network efficiency and provide quantifiable bandwidth utilization fodder for his management presentations:

- The ability of his Crosscomm

Corp. remote bridges to blend his IBM Systems Network Architecture (SNA) and Novell, Inc. Network traffic.

- The delivery of Novell's "burst-mode" IPX, a planned efficiency tweak to the Network communications protocol.

- A network management system to provide him with bandwidth utilization statistics on his TI bridges.

Currently, "we don't have a method to physically show why we need full T1s among our locations," Davis explained. "Our senior management doesn't understand [LAN traffic] very well. They're used to the mainframe world where you can support hundreds of dumb terminals across a 56K bit/sec. line just fine."

### Justifying the cost

For now, Davis said the only way to justify his T1 link is to tell management that the company can back up its weekly 4.5G bytes of data over it in 24 hours. Using a 56K bit/sec. line, the process takes an unacceptable

three days, he said. Davis is unable to gather T1 statistics from a multiplexer because he does not own his own equipment.

Davis said he could get better use of his T1 bandwidth with the router and IPX developments on his wish list. He explained that LAN packets such as Netware do not sequentially use multiple channels on a T1 line as terminal traffic does.

"If one terminal uses one channel, the next terminal communicates across the next channel. LAN packets use one route only, though they need the full 1.5M bit/sec. T1 bandwidth when they do transmit, he explained.

Currently, Greyhound divides its wide-area traffic into two "lanes," dedicating half the T1 pipe to corporate headquarter sites in Dallas to the Des Moines, Iowa, data center to SNA and the other to LAN traffic.

This is a fairly common tactic, according to Janet L. Hyland, director of network strategy re-

search at Forrester Research, Inc., a consultancy in Cambridge, Mass.

However, "the problem is that one channel could be empty while another is overflowing. So users are looking for a different solution where packets from both SNA and LAN environments are interleaved over the same physical circuit," Hyland said.

Did Witkowsky, president of Greyhound's router supplier, Marlboro, Mass.-based Crosscomm, said the firm is currently beta-testing a router feature that combines the LAN and SNA traffic "so both of these packets get multiplexed onto the same T1 or other WAN circuit."

Witkowsky said the feature will start shipping this month, and that the technology works by converting SNA packets into LAN packets within the router and reversing the process at the other end of the link.

In addition, Novell's "burst-

mode" IPX — expected before mid-1992 — would allow the router to save up LAN packets, then burst them efficiently down the wide-area link, Davis said. This would replace the current, slower scheme of waiting for acknowledgment of each single packet received before transmitting the next.

### Stretching Version 3.11

A Novell spokesman said burst-mode IPX is "currently being tested by Novell and a few customers" as an extension to Network Version 3.11 and "focuses on WAN performance." He said routers currently supporting IPX will not have to be upgraded and that it has not been determined whether users will have to pay for the feature.

Greyhound's manager of distributed systems, Meg Frantz, indicated that the wide-area networking issues facing the company are apt to burgeon.

Pending projects include the expansion of the bus company's nationwide reservations system "so you can go into a 7-Eleven (or other locations) and buy a ticket. That requires access to nationwide schedules and pricing in more places," she said.

## Late '91 flurry strikes LAN management field

BY ELISABETH HORWITT  
CIVILIAN

Novell, Inc.'s announcement of Network Management Map was only one of several promising developments in the local-area network management arena that took place just before the closing of 1991. Other key announcements included the following:

- Uggemans-Bass, Inc. (UB) announced that it had purchased a bare majority share (50.1%) of up-and-coming network hub and LAN management vendor Network, Inc.

Under the agreement, both companies will continue to sell their respective products, but Network will "share a lot of our technology into UB's systems," Network spokesman Kerry Wood said. The companies make a good complement, with Network targeting departmental LANs and UB focusing on the international, enterprise-wide LAN integration market.

While UB has announced no definite plans for porting Network's Network LAN management technology into its own products, "they have said our closeness to Network is one of our attractions," a Network spokesman said.

- The Internet Engineering Task Force (IETF) began working on a Token Ring version of the Remote Network Monitor

(Rmon) protocol. Rmon is a de facto industry standard that defines how various LAN monitors and protocol analyzers can send information to a central network management workstation — generally one running Simple Network Management Protocol (SNMP).

An Ethernet version of Rmon is close to finalization by IETF, and several vendors have already announced products that support the protocol. Right now, Token Ring management systems are proprietary. A Token Ring Rmon would let the same SNMP workstation manage both sides of the network house, providing the protocol gains support from leading vendors.

- IBM announced a new version of its Transmission Control Protocol/Internet Protocol (TCP/IP) software for VM; which is said to include SNMP support for IBM's 3172 controller. This, in turn, will enable users to manage the 3172's Fiber Distributed Data Interface connections via a host-based SNMP management system.

The new version introduces a TCP/IP-based client/server database system. The remote procedure call-based system is said to allow IBM RISC System/6000 or Sun Microsystems, Inc. Workstations to query a VM Structured Query Language/Data System VM database.

## Users wary of Novell management tool

CONTINUED FROM PAGE 49

information in a Btrieve database, which can then be accessed by a variety of third-party reporting and analysis packages.

The insurance company has been seeking a management system for its Network installation but has balked at the pricing of sophisticated protocol analyzers such as Network General Corp.'s Sniffer, Keller said. "We see a system that costs no more than 10% of the total cost of a LAN site as cost-effective network management," he said.

This makes Novell's pricing particularly attractive, he added. Network Management Map, along with the recently announced Network Requester for OS/2 Version 2.0, is bundled together as a single package dubbed Network Services for OS/2 and is priced at \$200 for a corporate-wide site license, Novell said.

Echlin, Inc., a manufacturing firm that runs all of its corporate applications on Network, is "cautiously interested" in Novell's new offering, according to Hock, the firm's director of information systems. However, "We're not too interested in OS/2," he added. "We see the future with [Microsoft Corp.'s] Windows and New Technology."

Keller's firm, in contrast, is not concerned about whether its LAN management system runs on DOS, OS/2 or Unix, he commented.

Novell does not plan to base

all of its future Network management products on OS/2, according to Edwards.

The OS/2 orientation of Novell's new management system is most likely to find favor with companies using IBM mainframes as LAN servers, Wood predicted. He said a recent Business Research survey showed that such firms make up 23% of large and medium companies.

"A lot of our clients are saying one of the most important things to do is integrate their LANs with the mainframe as a

first step toward downsizing,"

Network Management Map can collect information about almost anything that handles Novell's SPX/IPX protocols, including cable segments, Network 2.X and 3.X servers, OS/2, MS-DOS and Microsoft Windows workstations and bridges and routers, Edwards said.

Network Services for OS/2 is scheduled for availability when IBM's OS/2 Version 2.0 ships. That date is now set for March, IBM said.

## Plugging the holes?

Novell's Network Management Map fills some, but by no means all, of the gaps in the LAN vendor's integrated network management strategy.

Current product capabilities:

- An IBM Presentation Manager-based graphical user interface that shows status of distributed Network nodes through color coding, with zoom-in capabilities to obtain detailed status information.
- Automatic "discovery" of all active nodes across a distributed corporate LAN configuration and plotting of their positions on a topographical map.
- Ongoing monitoring of traffic and configurations of distributed LAN systems.
- Storage of statistics in a Btrieve database for later analysis.

- In the works:
- The ability for the user to set thresholds, such as error or traffic levels, which, if exceeded, would automatically trigger alarms.
- Network management products on platforms other than OS/2.
- Integration with Novell's protocol analyzers, Lantrons.
- Analysis of levels of Network CPU and disk use.

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# Ameritech takes aim with AI trials

BY ELLIS BOOKER  
OF CHICAGO

CHICAGO — Two years ago, Ameritech became the first of the regional Bell holding companies to announce its Advanced Intelligent Network (AIN) plans. In early December, it took the lead again, becoming the first to announce AIN customer trials.

However, commercial availability of AIN-based services in Ameritech's five-state region is still "a few years away," according to Ameritech.

AIN calls for the deployment of computer databases and intelligent switches throughout the phone network. These pieces work together to route customer calls based on information stored in a database.

For example, calls can be routed depending on criteria such as the time of day, or customers can arrange for simplified, wide-area dialing plans for outgoing calls.

The next iteration of AIN, expected in the 1997 time frame, will tightly integrate this approach with the administrative and billing systems used by phone companies. This should

dramatically speed up the hook-up, disconnection or modification of phone service — what telephone companies call "service provisioning."

The AIN architecture consists of the following parts:

- The Service Switching Point (SSP), the network access point at which an incoming call is first processed. The SSP strips the call's out-of-band signaling information and sends this to the signal transfer point (STP).

- The STP recognizes whether this is an AIN call; if it is, the signaling information is transferred to the service control point (SCP).

- The SCP, in essence a central database, references the Service Management System, a routing database where additional details for how the call should be handled are stored.

The entire process takes a fraction of a second.

Continuing Bell Corp. and American Drug Stores, both based in Chicago, will participate in Ameritech's AIN technical trial. The two will test a variety of call routing and forwarding, call blocking and simplified extension dialing capabilities.

# Telecom managers unsure about SMDS

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Jeff Stone, vice president at Infonetix Research, Inc., a consulting firm based in San Jose, Calif.

He said SMDS's packet-by-packet routing scheme serves as a better LAN extension than frame relay. Point-to-point-oriented frame relay, like a tele-

phone call, must establish a call path and then transmit all data over that nailed-up route.

Frame relay requires users to address data for specific sites, unlike the multi-point-oriented SMDS, which allows on-the-fly networking, said Pierre Sibille, manager of data product-line

management at Siemens Stromberg-Carlson in Boca Raton, Fla. Siemens makes the only frame-relay- and SMDS-capable central office switch generally available and is a member of both the Frame Relay Forum and SMDS Interest Group.

One SMDS drawback, Sibille acknowledged, will be that international SMDS is likely to be available only at T1 speeds, unlike frame relay, which is available in a number of both the 45M bit/sec. and 155M bit/sec. To date, there is no intercarrier specification for frame relay.

# Demarcation lines

A recent survey by Boston consultancy The Yankee Group of 80 large companies showed that 54% plan to implement SMDS, compared with 72% planning to use frame relay. The discrepancy can largely be chalked up to user unfamiliarity with the as-yet nonexistent SMDS service, which offers the following advantages:

- SMDS as a LAN extender requires less configuration work on the part of the user.
- SMDS speeds will eventually reach 155M bit/sec., while frame relay will probably reach only T3 (45M bit/sec.).
- Monthly T1 carrier charges might be significantly cheaper than frame-relay charges. For example, Bell Atlantic Corp.'s current service rate is \$500/month for T1 rates, compared with \$2,000 to \$3,000 per circuit per month for frame relay at T1 speeds.

• SMDS, an entire service description, is more

far-reaching than frame relay. It includes specifications for collecting billing information, network management and security — issues that have been cited as areas of concern by users considering frame relay.

However, points in frame relay's favor include the following:

- Global service and equipment are currently available.
- It is simpler and cheaper to upgrade from existing T1 equipment to frame relay than to SMDS.
- Frame relay spans both public and private networks.
- Users can often upgrade multiplexing equipment to support frame relay. If they do not already have equipment installed, the investment is still about half (about \$3,000 per site) that of the equipment needed to support SMDS.

JOANIE M. WEXLER

# Compuserve gives CIM 2.0 more search, flag functions

BY ELLIS BOOKER  
OF CHICAGO

COLUMBUS, Ohio — Compuserve, Inc. recently introduced the latest version of its Compuserve Information Manager (CIM), a windowed front end to the Compuserve Information Service.

Like its predecessor, CIM Version 2.0 tries to make navigating through Compuserve's hundreds of networked databases and on-line services less intimidating to first-time users. Compuserve officials said they estimated that there are now 150,000 copies of CIM for MS-DOS and 45,000 copies for the Apple Computer, Inc. Macintosh in the marketplace today.

Some of the changes in CIM 2.0 are cosmetic; such as the ability to resize and reshape CIM's windows and preserve window preferences between on-line sessions. The program also adds some functions in the searching and "flagging" of files in Compuserve's numerous on-line forum libraries.

For instance, users of the Executive News Service can establish preferences and instruct the

on-line service to clip and retain stories on particular subjects. When the user logs on, the clips are ready to be read or downloaded. Similarly, users can instruct the program to automatically track their stock portfolios.

In addition, forum messages can now be downloaded all at once; an improvement over CIM 1.3, which required that messages be captured individually. Another option automatically searches for marked files and then disconnects from the service once the last of these files has been downloaded.

An upgrade to CIM 2.0 can be downloaded on-line by current Compuserve members, users can also order the shrink-wrapped kit for a nominal fee. Starting in the spring, CIM 2.0 will be bundled with the basic \$49.95 Compuserve membership, which comes with a \$25 usage credit.

The DOS program requires 640K bytes of memory, a Hayes-compatible modem, a hard drive and DOS Version 2.1 or higher.

Compuserve officials also promise a Windows 3.0 implementation of CIM sometime later this summer or early fall.

# NEW PRODUCTS

## Local-area networking software

Supertime, Inc. has started shipping Version 1.1 of Supertime, its groupware package.

Supertime includes a calendar, contact directories, electronic mail and project management features. The revision offers improved sales management features, including a call list integrated into the calendar module and an auto dialer. Text editing is also enhanced.

Supertime runs under DOS and a variety of network protocols. Pricing ranges from \$295 for a single user to \$85 per user for over 100 users.

Supertime  
Suite 2206  
2025 Sheppard Ave. E.  
Willowdale, Ontario  
M2J 1V7  
(416) 499-3288

## Network management

The AG Group has enhanced Localpeak.

Localpeak 1.1 debugs LocalTalk networks. The new version displays additional network performance statistics and offers

improved functionality for remote troubleshooting.

The software costs \$495. Upgrades from previous versions cost \$60.

The AG Group  
Suite 202  
2540 Camino Diablo  
Walnut Creek, Calif. 94596  
(510) 937-7900

## Wide-area networking software

Morning Star Technologies, Inc. has released both synchronous and asynchronous versions of Point-to-Point Protocol (PPP) for the Santa Cruz Operation's SCO Unix.

PPP allows wide-area Transmission Control Protocol/Internet Protocol connections between local-area networks. The synchronous version supports communication rates up to T1. PPP features include packet filtering, TCP header compression, on-demand dialing and inactivity disconnect.

Pricing for the SCO Unix version of PPP is \$795 for a single workstation license.

Morning Star Technologies  
1760 Zollinger Road  
Columbus, Ohio 43221  
(614) 451-1883

## Micro-to-micro

A version of Carbon Copy Plus for the Microsoft Corp. Windows 3.0 platform has been released by Microcom, Inc.

The product offers file-transfer capabilities and remote control of another personal computer running Windows 3.0. It also includes a "chat" function. The price is \$199.

Microcom  
500 River Ridge Road  
Norwood, Mass. 02062  
(617) 551-1000

## Electronic mail

Folio Corp. has announced Mailbag, an electronic mail storage-and-retrieval system for Novell, Inc. Netware local-area networks.

Mailbag categories and archives messages from common E-mail packages including Microsoft Corp.'s Mail, Lotus Development Corp.'s CC-Mail and WordPerfect Corp.'s WordPerfect Office.

The product is available immediately and costs \$295 per 25-user license.

Folio  
Suite 150  
2115 N. Freedom Blvd.  
Provo, Utah 84604  
(801) 375-3700

NEW PRODUCTS

Local-area networking hardware

A new set of 10Base-T network hubs has been announced by 3Com Corp.

The Linkbuilder 10BT products are 12-port hubs that can be interconnected to support up to 48 10Base-T nodes as a single logical repeater. They also allow users to hot-swap a BNC or fiber backbone port.

The Linkbuilder 10BT costs approximately \$90 per port. An intelligent version supporting Simple Network Management Protocol costs approximately \$110 per port. A single-port BNC module costs \$149.

3Com  
3165 Kifer Road  
Santa Clara, Calif. 95052  
(408) 562-6400



Storage Dimensions' Lanstor EL can control up to seven disk drives

Storage Dimensions, Inc. has introduced the Lanstor EL series of storage products for small to midsize Novell, Inc. Netware local-area networks.

The Lanstor EL line includes a small computer systems interface adapter that can control up to seven disk drives. Drives in the product line offer formatted capacities of 213M, 339M and 535M bytes. Data transfer rates are as high as 5M bytes/sec. The system can be configured to provide more than 3G bytes of storage.

Pricing starts at \$1,825 for an internal 213M-byte subsystem.

A Data Fusion option is available for Lanstor EL systems running under Netware 3.11. Data Fusion reduces rotational latency by fusing small data requests into a single block, the company said. Data Fusion costs \$249.

Storage Dimensions  
1656 McCarthy Blvd.  
Milpitas, Calif. 95035  
(408) 954-0710

Gateways, bridges, routers

Intellicom, Inc. has announced a low-cost, high-performance local Ethernet bridge.

The Quicknet 6000 bridge consumes more than 27,000 packet/sec. and forwards more than 14,700 packet/sec. It is protocol independent, Intellicom said, and

supports the Simple Network Management Protocol. The bridge also automatically learns the network configuration and stores up to 10,000 Internet Protocol addresses.

Quicknet 6000 costs \$1,975.  
Intellicom  
20415 Northhoff St.  
Chatsworth, Calif. 91311  
(818) 407-3900

Modata Corp. has announced the availability of its enhanced Linkmaster 7100 Network Controller.

The Linkmaster 7100 is an IBM 3174-compatible device with expanded local-area network support. The product offers

10 new features including Systems Network Architecture gateway connectivity for Ethernet, concurrent SNA and non-SNA channel protocols on the same channel and multiple host protocol combinations.

Pricing ranges from \$5,635 for a 16-port, single-host controller to \$29,935 for a 128-port, single-channel version.

Modata  
310 Interlocken Pkwy.  
Broomfield, Colo. 80021  
(303) 460-9200

Micro-to-host

Visioware Ltd. has ported its PC-Connect product to the VMS operating system.

PC-Connect allows personal computers running Microsoft Corp.'s Windows environment to communicate with VMS systems as well as Unix-based systems. It enables Windows to serve as a front end for file transfer and cut-and-paste operations. The product supports Dynamic Data Exchange links between Windows and VMS applications and includes a VMS version of the Windows Notepad, Visioware reported.

Pricing starts at approximately \$2,000 for up to eight users. A number of site license options are available.

Visioware  
57 Cambridge Lane  
Lexington, Mass. 01824  
England  
(617-44) 532-7885



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**MOTOROLA**

# MANAGER'S JOURNAL

## EXECUTIVE TRACK

J. Curry1 Seaman III has been named chief information officer at HomeFed Bank in San Diego, the seventh largest savings institution in the U.S., with assets of \$15 billion. He is responsible for all information technology and the deposit back-office operations.

Seaman was most recently senior vice president of operations at the Sunbelt Savings Federal Savings Bank in Dallas for the past two years. He joined Sunbelt after two years as an account manager at Systematics, Inc.

Before that, Seaman spent 11 years at Republic Bank as senior vice president of operations in Lubbock, Texas, and in Dallas. Seaman holds a bachelor's degree from Mississippi State University.

.....  
Bill Murray, director of information systems at Tribune Broadcasting Co. in Chicago, has been named to the parent Tribune Co. a newly formed Technology Steering Committee.

The committee is charged with studying and planning for the strategic direction of technology across all Tribune lines of business. Tribune owns six major TV stations, four radio stations, three regional radio networks, seven newspapers and the Chicago Cubs.

.....  
Carl Esposito has been promoted to senior systems architect at Merrill Lynch & Co. in New York. He is responsible for managing the development of firmwide human resources databases on a two-tiered platform of IBM DB2 and Oracle Corp. client/server database management systems.

Esposito has been at Merrill Lynch for two years and was previously a systems architect. Before that, he was a manager of systems development at H. J. Heinz Co.

Esposito is president of the New York Oracle users group, publisher of the "Oracle User Resource" newsletter.

Esposito holds an MBA from the New York Institute of Technology and a certificate of advanced technology from Columbia University.

## Fresh air beats Times Square

Reynolds IS chief Robert Wynn has no regrets about leaving the big city for Nevada

BY JIM NASH  
OF STAFF

**R**obert Wynn laughs loudly at the comparison of his life to the television show "Green Acres." It's funny, the information systems manager admits, because it's true.

Last October, Wynn, former manager of computer systems and planning at Manufacturers Hanover Trust Co. in New York, chuckled "the mountains of Manhattan for the mountains of Nevada." Wynn now manages the information systems department at Reynolds Electrical & Engineering Co. in Las Vegas. Reynolds is a U.S. Department of Energy contractor that for 40 years has provided site construction and support for underground tests of nuclear warheads.

Wynn agrees the change he made is continental in size. "But the time for change was there. I needed to expand my career and my experience," Wynn says. "The East Coast was a negative experience."

Consolidations and mergers in the late 1980s were sweeping away those companies that had not already lost their economic edge, he notes, "and our revenue stream looked bad." With consolidation would come staff cutbacks, something in which the 18-year Manny Hansen veteran was loathe to participate.

Wynn left Manufacturers Hanover a year ago, just months ahead of its merger with Chemical Bank. He took

## PROFILE: Robert Wynn



Position: IS manager at Reynolds Electrical & Engineering Co.  
Mission: Organizing and directing a large staff committed to doing its own software development, operations and support

what he considered a "bridge job," working with Blinn Computer Services, a small New York consulting company catering to financial services firms. "But my love is systems management," he says, "and my objective was to become a CIO."

A graduate of Fordham University in New York, Wynn joined the Federal Reserve Bank in New York in 1969. There, he learned the particulars of financial communications equipment as a systems analyst.

Continued on page 56

## New Year: It's high time for an IS makeover

BY CLINTON WILDER  
OF STAFF

**T**he new year. Time for questions, self-examination and New Year's resolutions that are put on the shelf to gather dust as soon as the first "drop everything" crisis lands on your desk.

One leading information systems consultant, however, suggests that letting resolutions languish this time around could be suicidal.

Calling 1992 "the year of introspection" of the IS, N. Dean Meyer, president of NDMA, Inc. in Ridgfield, Conn., said the IS function must undergo a fundamental change in order to survive.

Meyer contends that somewhere in the redundancy of the charismatic chief information officer, many IS organizations have lost sight of management fundamentals.

Without changing the organization to be responsive, cost-effective and

aligned with the business, the CIO is doomed to failure in the eyes of senior management—and will become another CIO turnover casualty.

### The "better organization"

"Unlike in Japan, many Americans don't treat management as a science," Meyer said. "Anyone who talks a good game can make it to the top. But IS executives had better learn how to design better organizations."

The better organization is one in which the CIO has empowered both the technical specialists and end users in the business to make technology and budget decisions. A growing trend that NDMA and other firms support is placing business users in charge of IS budget prioritizing for their specific needs.

"The IS executive can never know enough to make all the decisions," Meyer said. "The introspective executive is not a decision maker but a culture maker, building an environment

where people can make the best decisions."

To make the organization more responsive and to keep the budget watchdogs at bay in recessionary times, Meyer recommends cheaper IS projects with faster paybacks. He calls these "the golden apples."

"You could spend three years and \$5 million to rewrite your whole customer information system for an eventual payback of \$20 million," he said. "But there may be 100 opportunities for a \$1 million payoff with a \$10,000 investment in end-user computing. Focus on low-cost, high-payoff opportunities."

Such projects can help convince senior management that there is a return on investment (ROI) payoff from IS spending—and save the CIO's job.

Senior executives are "getting fed up when ROI is low and IS appears to be a necessary evil," Meyer said. "But at the same time, they are more computer-literate and more excited about the potential of technology. That combination is putting IS executives in trouble."



## Fresh air beckoned to Reynolds' Wynn

CONTINUED FROM PAGE 55

Three years later, he left to teach computer science at a U.S. Department of Defense systems management school in Fort Belvoir, Va. Manufacturers Hanover lured him away in 1971 as a senior systems analyst.

It was a wait at the *New York Times* that sent the 44-year-old westward. "All it said was that Reynolds in Las Vegas needed an IS manager," Wynn recalls. "All I saw was *Las Vegas*. 'Now there's a change,' I said. In a New York minute, here I was."

Reynolds, he learned, wanted change. "That's why they beckoned outside the comfort zone for the search," Fluring by had nothing to lose, Wynn says. "I was told in my responses. I'd give them very New York answers." He remembers saying point blank: "You have to be very customer-oriented even though you're part of the government."

"We never considered [Wynn] a gamble," says Ed Weintraub, executive vice president and department manager at

Reynolds, who said he was not taken back by Wynn's directness. Nor did Weintraub think it odd to be interviewing someone so seemingly foreign to Reynolds' culture.

"Bob had the management skills to plan, organize and direct a large staff," Weintraub says. And Manny's operation was similar in size to Reynolds'. Hiring him brought new blood to the company, Weintraub says, but that has been a side benefit to his capabilities.

**Varied challenges**  
At Reynolds, Wynn supervises 150 employees and helps maintain an IS department committed to doing its own software development, computer operations and technical support. There are about 85 Digital Equipment Corp. Microvaxes, six VAX 8650, 8530 and 8700 mainframes as well as numerous Novell, Inc. networks with T1 links.

For all their contrasts, Wynn says there is remarkably little difference between the Reynolds

olds shop and Manny Haney's. Both strive for zero errors. In New York, the object was to maintain systems that managed massive amounts of money. In Nevada, IS maintains machines that manage mundane business applications — but the department also plays a crucial role in ensuring the safety of Reynolds employees and the surrounding environment (see story at right).

Wynn said he has no political qualms about the nuclear tests themselves. "This company does an unbelievable service to the Department of Defense, providing environmentally safe testing that ensures the safety of this nation," he says.

Overall, he says, he is acclimating well. "I do miss Manhattan from the point of Broadway shows," he says. "But I've seen James Brown, Tom Jones and other entertainment here. It's easy to meet people. It's kind of the same kind of melting pot as New York: lots of people from somewhere else."

As it happens, he sees other similarities between Manhattan and Las Vegas. "I pictured big city, lights, action," he explains, and that was what he found. "But it's a big city with a small-town sense to it."

It was the small-town feel that appealed most to him. Im-

## Company town

For all the similarities Robert Wynn may find between his job maintaining systems at Manufacturers Hanover and Reynolds Electrical & Engineering, the role of the equipment differs enormously.

Besides monitoring radiation dosages accumulated by employees, Reynolds' systems also help run the tiny, private town of Mercury, Nev. Mercury was built by the Department of Energy to house test-site employees. It looks like a miniature village shimmering miles behind a barbed wire fence in the Nevada desert.

For all intents and purposes, it is a giant hotel and motor pool. Employees must homes for seasonal fees and are provided with vehicles. Reynolds, in fact, manages about 5,500 autos, the largest nonmilitary pool in the nation.

The company's DEC VAX computers maintain databases that note who is scheduled to arrive in Mercury, which house they will rent, what, if any, transportation they will need and how long they will stay, Wynn explains. The computers go so far as to help schedule entertainment in the company town's theater and juggle food deliveries to its stores.

JIM NASH

mediately upon arriving — in less time than it usually took him to find a parking space in Manhattan — Wynn had purchased his first Boston lot and a pair of cowboy boots.

But when Wynn wants to remember how different this world really is from the high-rise towers of New York, all he has to do is drive out to the desert sites

where Reynolds has conducted its testing for most of the nuclear age. Scramble-covered, purple mountains scrape the sky on the horizon, while around him stretches sun-blasted desert with occasional concentric circles marking test spots.

"The first time I was on the [testing site], I thought I was on the moon," Wynn says.

## MANAGEMENT SHORTS

### Poll: 36% planning to hire

Searching for a ray of economic hope? There may be one in the latest survey of hiring intentions conducted by Compu-search, the data processing division of Cleveland-based personnel search firm Management Recruiters International, Inc.

Compu-search polled 400 firms and found that 35.8% plan to increase their information systems staffs in the first half of 1992. This represents a 6.9% jump over projections for the last half of 1991.

Not surprisingly, however, there is some bad news: 13.8% of firms polled said they plan to reduce IS staff in the same period, an increase of 1.2% over the second half of 1991. About half the firms (50.3%) plan to maintain current staff sizes in the next six months.

The most aggressive IS hiring will be in the health care industry, where 59.3% of the firms polled said they would increase IS hiring. The data processing industry was next, with 43.9% planning to beef up IS staffs, followed by the food industry at 35.5% and fabricated metal products at 32%.

The Association for Computer Operations Management (AFCOM) will present its first "Data Center Manager

of the Year" award for excellence in data center management. The award will be presented at a special awards banquet during AFCOM's 12th annual conference and trade show in Nashville on April 29.

Managers directly responsible for the management of a computer operations department are eligible for nomination. Candidates can be nominated by professional colleagues and fellow employees, but not vendors who sell products to the data center.

Nominations should be submitted to AFCOM, 742 E. Chapman Ave., Orange, Calif. 92666.

**Profit-Oriented Systems Planning Program (POSP)**, an IS research consortium, will hold its winter meeting Feb. 3-5 in San Diego. Nonmembers of Carrollton, Texas-based POSP are invited to attend but must pay a higher fee.

The conference will cover a range of topics including using IS to seize business opportunities, improving return on investment through re-engineering and dealing with shifting technology environments.

Speakers include Thomas R. Gaughan, senior vice president and chief information officer at Home Insurance Co.

## CALENDAR

### JAN. 26-FEB. 1

The AIS/AGU Help Systems Operations Automation User Conference, Orlando, Fla. Jan. 27-30 — Contact: Help Systems, Inc., Milwaukee, Wis. (414) 933-0600.

Improving Productivity in Systems Development, Phoenix, Jan. 27-31 — Contact: Applied Computer Research, Inc., Phoenix, Ariz. (602) 965-5625.

Concert '92, Washington, D.C., Jan. 27-31 — Contact: Rachel Warner, World Expo Corp., Fremington, Mass. (508) 879-6700.

Improving Programmer Productivity Seminar, Washington, D.C., Jan. 28 — Contact: James E. White, Computer Consulting, Washington, D.C. (202) 544-5374.

Computer Graphics Show, New York, Jan. 28-30 — Contact: McGraw-Hill, Inc., New York, N.Y. (212) 512-1080.

Winfield & OS/2 Conference, San Jose, Calif., Jan. 28-30 — Contact: San Jose, Calif. 415-280-1000.

Infotech Las Vegas, Jan. 28-30 — Contact: Infotech International, Inc., Cupertino, Calif. (415) 495-9434.

12th Annual Florida Educational Technology Conference, Tampa, Fla., Jan. 28-30 — Contact: Business Assn. Cos. Office of Educational Technology, Tallahassee, Fla. (904) 498-6586.

### FEB. 2-8

Western Communications Forum, Arizona, Calif., Feb. 3-5 — Contact: Western Communications Forum, Chicago, Ill. (312) 536-3609.

Information Management Conference, New York, Feb. 4-5 — Contact: The Conference Board, New York, N.Y. (212) 759-0000.

Be-anything/Be: The Implementation Perspective, Dallas, Feb. 4-6 — Contact: Hammer & Co., Conbridge, Mass. (617) 354-5655.

Microvaxes, Washington, D.C., Feb. 4-6 — Contact: The International Communications Industries Association, Fairfax, Va. (703) 275-7200.

### FEB. 9-15

Computer Graphics '92, Orlando, Fla., Feb. 10-12 — Contact: Shale A. McDonald, Frost & Sullivan, Inc., New York, N.Y. (212) 233-1080.

Neurologist '92, Boston, Feb. 11-13 — Contact: Anne J. Solly, Brown Bookman Associates, Englewood Cliffs, N.J. (201) 596-8642.

Design, Calgary, Alberta, Feb. 11-13 — Contact: Miller Freeman Exposition, Boston, Mass. (617) 273-3076.

### FEB. 16-22

Information Security Management Symposium, San Diego, Feb. 16-18 — Contact: Pamela Smith, MIS Training Institute, Fremont, Calif. (909) 779-7999.

CASE World Conference & Exposition, Santa Clara, Calif., Feb. 18-20 — Contact: Digital Consulting, Amherst, Mass. (508) 470-3050.

Keyfield Seminars '92, Boston, Feb. 19-21 — Contact: Beth Saffer, Seybold Seminars, Malibu, Calif. (310) 477-0500.

### FEB. 23-29

Annual Platforms for Computing (PCL) Forum, Tucson, Ariz., Feb. 23-25 — Contact: Schwartz Holdings, Inc., New York, N.Y. (212) 758-3434.

1992 International Help Desk Conference, New Orleans, Feb. 25-27 — Contact: Help Desk Institute, Colorado Springs, Colo. (719) 531-5138.

Software Development Spring '92, Santa Clara, Calif., Feb. 25-28 — Contact: Miller Freeman Publications, Inc., Santa Clara, Calif. (415) 955-8414.

Synoptics Users Group Conference, San Francisco, Feb. 24-26 — Contact: Ampeg Laps, Synoptics User Group, Santa Clara, Calif. (408) 746-1073.

Minneapolis Conference, Orlando, Fla., Feb. 24-28 — Contact: Managerial Development Association, Everett, Wash. (206) 252-6946.

### MARCH 1-7

Shore '92, Anaheim, Calif., March 7-10 — Contact: Pm Scher, Shore Seminars, San Jose, Calif. (415) 823-0033.

Union & Open Systems, Toronto, March 4-5 — Contact: Ed James, Duquesne, Canada, New York, Ontario (416) 496-5121.

Computers in Libraries, Washington, D.C., March 4 — Contact: Mosher Conference Management, Westport, Conn. (203) 238-0907.

### MARCH 8-15

Microsoft Data Presenting, Orlando, Fla., March 9-11 — Contact: Client & Sales, MIS Training Institute, Fremont, Calif. (909) 779-7999.

CAD & Engineering Workstations '92 and Business Graphics, Anaheim, Calif., March 9-12 — Contact: National Computer Graphics Association, Pacific, Va. (703) 596-6600.

Setting Mainframe Business Value from Technology, New York, March 10-11 — Contact: The Conference Board, New York, N.Y. (212) 339-0250.



# EXECUTIVE REPORT

JOINING THE QUALITY CONTEST

## For IS, quality is 'job none'

*U.S. businesses are abuzz with talk of quality, but surprisingly few look to information systems as a means to achieve it*



Miles, Inc.'s John Trewness, a quality leader at the pharmaceutical firm, says IS can have an impact if it puts business needs first

BY ALICE LAPLANTE

Three years ago, Carrier Corp. wasn't exactly a hotbed of quality. The Syracuse, N.Y.-based manufacturing giant faced eroding market share and — perhaps worse — an increasing perception that it was not communicating effectively with customers.

Small wonder: A manual order-entry system designed to match products with customers was plagued with problems, resulting in a 70% error rate. The system handling one of Carrier's bread-and-butter products, a commercial air-conditioning unit, had so many steps that mistakes were all but inevitable.

Still worse, says Paul Burkhardt, manager of applications development at Carrier, errors sometimes went undetected until the end of the manufacturing line, where workers would discover a wrong coil or similar problem. Worst of all, big mistakes would occasionally reach customers.

In 1988, Carrier said "enough" and started a Total Quality Management (TQM) program in

which information technology would play a big role. Today, an expert system — developed using an IBM expert system shell on a 3090 mainframe, later converted to Aion Corp. technology — coordinates everything from sales to manufacturing, resulting in fewer errors, lower manufacturing costs and happier customers, Burkhardt says.

In fact, Carrier management was so pleased with its first success using technology to beat a quality problem that it is now looking for new ways information systems can help streamline business processes.

Sadly, Carrier is a minority among U.S. businesses. Although quality is an oft-heard term, to date, few organizations have effectively harnessed information technology to improve the quality of their goods and services.

**U.S. misses the connection**  
A recent joint study by Ernst & Young and the American Quality Foundation (AQF) found that only 22% of U.S. businesses believe technology is of "primary importance" in meeting quality goals — the lowest percentage of the four countries surveyed. In contrast, 40% of Japanese firms, 33% of German firms and 31% of Canadian firms saw technology as a key factor, says AQF.

President Joshua Hammond (see chart page 59).

The study jibes with a recent member survey given by the Society for Information Management (SIM). Although the importance of quality rated 3.19 on a scale of 4.0, only 15% of the 580 IS executives responding felt it was their role to act as a supplier of technology to enable quality programs.

"The people introducing TQM to corporations all read the same business books and articles and concentrate on things like manufacturing and customer service," says Ted Prince, chief executive officer of the Computer Power Group, Inc., a New York-based consulting firm. "Virtually none of them are interested in IS."

That's a big (and ironic) mistake, Prince notes, because good information is a top concern of quality programs. "If you are going to improve manufacturing, you need data... on what you are doing wrong, what you are doing right. Where are you going to compile that data? How are you going to analyze it, get it to the right people? Without the help of IS, it's an impossible task."

Carrier knew this when it had IS work with business management on the order-processing

*Continued on page 58*



### Role of IS in Quality

#### KEY POINTS

► Quality is a popular buzzword in U.S. businesses, but few have effectively harnessed information technology.

► Most IS quality efforts focus on improving internal processes, such as application development.

► Americans place less faith in the ability of technology to improve quality than do Europeans or the Japanese.

► Carrier Corp. is an exception. It slashed production costs by installing expert systems.

► U.S. government agencies are starting to climb on board the quality bandwagon.

► Quality pioneer Nashua Corp. shifted to local processing as the latest advance in quality programs, began in the late 1970s.

#### QUOTABLE:

*"The people introducing TQM to corporations all read the same business books and articles... Virtually none of them are interested in IS."*

Ted Prince  
Computer Power Group

Laplante is a free-lance writer based in Palo Alto, Calif.

# Few U.S. businesses look to IS to achieve quality

CONTINUED FROM PAGE 57

problem. More often, however, an IS department participating in a TQM program focuses only on using quality techniques to examine and improve internal functions such as producing software applications. That's what nearly half of the SIM survey respondents said.

Quality experts and IS managers note that the two are, of course, related. Without a high-quality IS function, chances are slim that technology will be used well in a corporate quality program. Unfortunately, experts say the traditional definition of quality — minimizing defects while trying to conform to pre-established customer specifications — isn't very useful or adapted to most IS managers for several reasons:

- Few IS shops have identified their customers, much less asked them what they believe constitutes a high-quality IS product or service.
- Quality techniques or measurements have yet to be specifically adapted to IS functions.
- IS culture still tends to focus on individual performance and craft — the antithesis of a TQM program, which highlights group effort and routine functional processes.
- IS is still perceived by corporate management as being more concerned with technology than overall business efficiency.

## New path for IS

Does all this mean that IS is doomed to count software bugs and that it will never make a meaningful contribution to corporate quality? Not at all, according to Computer Power Group's Prince and others. But, they say, most IS departments have a long



Source: Society for Information Management, annual survey of 545 members

way to go when it comes to planting quality in their own backyards and beyond.

A key first step is defining what quality means to IS. Most say that it means knowing exactly what customers want.

"Quality means changing from a technical focus to one that takes into account real business issues," says John Tremme, vice president of IS and logistics at pharmaceuticals firm Miles, Inc. in Elkhart, Ind.

## Quality quest

especially in health care

Do you have a companywide quality program in place?

Industry	Yes
Health	71%
Manufacturing	66%
Trans. and public util.	64%
Business and legal	44%
Wholesale and retail	40%
Education	35%
Agriculture; mining, construction	0%
All	38%

but IS is still not leading

What is the primary role of IS in your quality program?



CW Chart: Jonell Gossamer

For example, a customer service department might say it needs a printer that works 24 hours a day. In reality, the department is really expressing a business need — instant, uninterrupted service. Learning to translate technical requests into business needs is key, says Tremme, whose IS quality efforts launched him into a leadership role in his firm's quality effort.

Prince agrees: "Before an IS manager even thinks of quality in

terms of counting bugs or of measuring function points of code, he or she needs to understand who the customers are and what they satisfy them. Don't even think of getting into the technical mumbo jumbo until you do that."

So how do you determine what customers want? Just sit, says Diane L. Beal, president of Quality Breakthrough, a consulting firm in Brainerd, Minn. "For years in data processing,

we were meeting requirements and specifications, but they weren't necessarily provided by the customer." That must change, she says, if quality is to blossom in IS and grow into the organization.

A good example is report generation. In many companies, thick reports are generated by IS, then blanketed across the organization. "General Electric has made enormous strides by asking the simple question, 'Who needs this report, and exactly what information do they need from it?'" AQP's Hammond says. In many cases, a one-page summary would be perfectly adequate, he adds.

Motorola, Inc., internationally recognized as a quality leader, took a similar tack in simplifying a common process. The company used information technology to slash the time needed for generating financial reporting from months to days. "The size of the reports has been whittled down to almost zero," Hammond notes.

Jim Allred, chairman of the American Executives for Manufacturing Excellence, notes that IS has traditionally given manufacturing executives historical data. To be really useful, he says, IS should focus on providing data that can really improve product quality.

"Usually the damage has already been done by the time senior management sees data provided by IS," says Allred, who is president of Quality Resources in Bountiful, Utah. "In effect, you are reviewing problems that already occurred rather than using IS to avoid them."

Much more helpful to corporate quality efforts would be 100% accurate, real-time data during the manufacturing process.

Tom Bowman, quality man-



for your information

## New studies examine relationship between quality and IS

Several landmark studies attempting to relate quality to technology concerns and issues are due by midyear.

The reports aim to provide IS managers with concrete evidence of what quality programs can and cannot do, specifically the following:

► **The Society for Information Management (SIM)** will deliver results from a new study on the quality of IS at its annual 1992 conference. More than 50 firms participated as members of a working group for the 18-month study, which began in early 1990. The project has several aims, according to co-chairman Nancy Wendt, partner at the Winhall Group in Bloomfield, Conn. They include describing applications and technology that can help IS contribute to corporate-wide Total Quality Management (TQM) programs.

► **Ernst & Young's Center for Information Technology and Strategy** in Boston recently kicked off a program that focuses on quality in IS. "We

want to see how leading IS organizations are applying quality tools," says Richard Swanborg, director of the TQM within IS program. Participants include AT&T, Eastman Kodak Co., Amertech and Apple Computer, Inc.

► This spring, IS managers will finally have hard numbers about how technology impacts bottom-line performance. The American Quality Foundation, in a joint study with Ernst & Young, is compiling the results of the technology portion of its international study on quality. Joshua Hammond, president of the American Quality Foundation, says a key goal of the study is to correlate quality practices with actual results. "We are very interested to see if there is a high correlation between the use of technology in quality programs and high-performance companies," Hammond says. "If there is, that's bad news for U.S. businesses, who have been lagging behind the Japanese."

The American Society of Quality Control (ASQC) is expected to release guidelines at its annual meeting in 1992. Solicited from ASQC members, the guidelines would be designed to help companies implementing automated quality information systems in

computer-integrated manufacturing programs.

► **Black and Decker Corp.'s** IS department has initiated a TQM initiative. The main goal of the initiative is to increase communication between IS and the other departments in the firm. Today, the firm is looking for TQM to generate better product yields (CW, July 15, 1991).

► **Wolf Advisory International Ltd.** in Lancaster, Pa., offers a free questionnaire and quality rating card for firms to gauge the effectiveness of their departments. The audit asks managers to agree or disagree with statements addressing such issues as user satisfaction, productivity, planning and training. For a copy of the audit, call Wolf at (717) 299-6653.

► **Austin, Texas-based Sematech**, a consortium of 14 major U.S. semiconductor manufacturers, is focusing on quality as a means to alter the way competing firms interact. Keith C. Erickson was appointed the consortium's vice president and director of total quality, and he concentrates on the Partnering for Total Quality program there. He also supervises the implementation of Sematech's internal TQM program.

ager at General Tire & Rubber Co. in Charlotte, N.C., is doing just that. He's installing a local-area network that will give plant-floor operators real-time data on raw materials as they enter the factory.

Instead of depending on paper graphs periodically generated by a minicomputer, the new system will automatically alert operators of a bad batch so that operation can be shut down before many bad tires have been manufactured.

#### How are we doing?

Once customer requirements are identified, experts say measuring performance is the next critical step. While discussions continue about the best way to measure IS quality, most agree that collecting huge volumes of data is not the answer.

"Often, these are just collections of numbers, as opposed to data that can be used to make an improvement in a business process," says Aleta Holub, vice president of quality assurance at First National Bank in Chicago.

Holub says it isn't enough to simply count and compile errors or defects in a product or service, then issue a report. Instead, errors must be carefully broken down so that employees can actually take action and improve their work.

At Corning, Inc. in Corning, N.Y., a \$3 billion firm that was a finalist in the 1989 Malcolm Baldrige National Quality Award Competition, quality is considered a stra-

tegrated. For instance, applications developers, whose self-perception is that of highly specialized craftsmen, are the antithesis of TQM philosophy.

"IS organizations have traditionally been made up of mavericks," notes Victor Schwinghamer, director of quality management support at First Data Resources, Inc., an Omaha-based credit transaction processing subsidiary of American Express Co. "People who stay up all night to fix systems problems have been viewed as heroes. Yet the emphasis instead should be on those unexciting individuals who never have to come in the middle of the night because they don't create any problems to begin with."

"The difference between a quality culture and a nonquality culture is the Mack truck test," Computer Power Group's Prince says. "If a Mack truck plows through your IS department, will you still be able to replicate quality efforts? Or if you lose certain individuals, will everything fall apart? If you can't pass this test, you don't have a quality shop."

Schwinghamer says another big problem in IS culture is the fear that reporting a bug or a quality defect reflects poorly on the individual worker. Changing such attitudes requires conscious effort, says Schwinghamer, who works full-time at quality improvement and manages six employees within the systems and programming group. "You need the day-to-day emphasis to really put quality into the corporate culture."

Such challenges are tough even in flush times, but convincing workers of corporate commitment to quality is especially tough for managers amid recession and downsizing, experts say. Yet it's possible.

At Corning, employees give peers performance evaluations, merit raises and, on occasion, promotions or pink slips. While head count has dropped as several layers of management have been eliminated, Venette says, no jobs have been lost. Employees have been retrained and placed elsewhere in the

company.

"If you are telling people it's up to them to come up with ways to streamline the organization and make it more efficient, you have to guarantee up-front that they won't be unemployed as a result," Venette says.

Indeed, Texas Instruments, Inc. even created a new category of IS jobs as a result of its quality program. Dubbed "process re-engineers," these workers combine technical know-how with the ability to examine a business process for quality defects, explains Gary Pollard, total quality control manager for information systems and services at TI. These process re-engineers then devise ways to apply technology to fix problems. "We envision that this will be a key job for IS workers of the future," he adds.

While such a scene may seem light-years away for many IS shops, pioneering IS groups at Carrier, Corning, TI and elsewhere show that it's possible. ■

## Some starting points for quality assistance

Following is a sampling of where firms can turn for information on quality in the workplace.

#### GROUPS AND ASSOCIATIONS:

##### American Executives for Manufacturing Excellence (AEME)

8665 East Via De Ventura/G-200  
Scottsdale, Ariz. 85258  
(602) 951-8994

##### American Productivity and Quality Center

123 North Post Oak Lane  
Houston, Texas 77024-7797  
(713) 681-4020

##### American Quality Foundation

Suite 2C  
253 West 53rd St.  
New York, N.Y. 10023  
(212) 724-3170

##### American Society for Quality Control (ASQC)

P.O. Box 3005  
Milwaukee, Wis. 53201-3005  
(414) 272-8575

##### Association for Quality and Participation

Suite 501  
801B West 8th St.  
Cincinnati, Ohio 45203-1607  
(513) 381-1959

##### Computer Power Group, Inc.

1500 Broadway  
New York, N.Y. 10036  
(212) 575-2225

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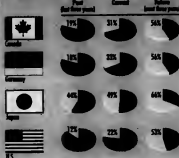
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#### A growing global role

A survey of more than 520 business sites indicates the increasing impact of the use of technology in meeting customer expectations.



Source: International Quality Study (Iris & Young and the American Quality Foundation)

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tegic weapon. To this end, IS quality is measured by extensive surveys and interviews of both internal and external customers, according to Al Venette, manager of quality for IS.

Over the past year, Venette says, Corning's IS department has been working on measuring customer satisfaction in two areas: project and direct-support services. IS groups conduct surveys and interviews and then summarize results for departmental IS managers.

"We've been measuring systems availability for ages and will continue to do so," Venette says. "But that doesn't always tell you if the users have been able to get the applications they want, when they want them, and if those applications have adequate response times."

#### Culture shock needed

IS organizations with a desire to help the corporate quality mission might do well to look at computing culture as well, experts

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# Nashua keeps quality flame burning in customer service

BY CATHERINE MARENGHI

Long before it was in vogue to talk about quality, Nashua Corp. was trying to do something about it.

As far back as the late 1970s, the Nashua, N.H.-based manufacturer of office supplies and computer products worked with consultant and quality guru W. Edwards Deming, Company Chief Executive Officer William Conway had seized on quality as a means to grab long-term competitive advantage in manufacturing. Conway hired Deming, now a board member, to bring continual quality improvements to the company's processes and customer service.

For a long time, the company's information systems de-

handling the unique requirements of each division.

The net result of this two-tiered approach was more likely to be customer frustration than satisfaction.

For example, if a customer called to order copy paper, the order taker had to dial into a central system to verify customer information and do a credit check. He then had to hang up and log on to a local personal computer to calculate pricing, which was unique to each division. If a second call to the "sales" center with pricing information produced an order, the order taker had to check another central inventory availability system. If all went well and no errors were made, it took two days to complete the order — if the customer had not lost interest and gone to a competitor.

Today, clerks quote prices on available inventory, mentioning volume discounts or special orders when applicable, and process resulting orders on a local system in just minutes.

## Five-year plan

Because each of the company's diverse businesses has its own set of manufacturing processes, raw materials, finished goods and customers, Gallagher says it did not make sense to have central systems that played to the lowest common denominator. Instead, he wanted each division to have the information systems that were best for its business.

The five-year plan was consistent with the company's overall philosophy of pushing decisions down in the organization to improve processes. At each plant, changes were effected by small teams of IS staffers and users empowered to enact system changes at the local level. Corporate MIS provided the systems selection methodology, but it was up to the local team to make the hardware and software evaluations.

The plan was discrete systems within each division, including four Digital Equipment Corp. Vaxchatters, an IBM RISC System/6000, a Wang Laboratories, Inc. VS 8360 and five IBM System/38s that are being converted to four Application System/400s this year. An IBM 4381 mainframe, the last vestige of centralized IS, will be phased out within 1½ years.

"It wasn't downsizing," Gallagher stresses.

At the same time, decentralization flattened the IS organization, shifting from a five- to a three-level hierarchy and growing from one data center to nine. The number of IS personnel has

remained at about 60, but over time, there has been a redistribution of jobs: fewer middle managers and more programmer/analysts.

"Our annual net corporate expense for MIS has nearly doubled. But we have better systems in place at the functional level, handling the unique requirements of each division. We didn't get the best cost but the best fit," Gallagher says.

The added expenses have been mostly in outfitting the nine local data centers with the most appropriate systems, however — not purchasing high-ticket systems or glitzy applications. For example, a simple automated ZIP code verification package helps the company's Mail-in Photo-Shopping Division process 70,000 films a day with virtually zero errors.

Information systems are applied only where and to the extent that they make sense, says Earl Dodge, an internal quality consultant, noting that the company still does flowcharting by

hand. "More attention is paid to a manufacturing process if a person physically plots a point on paper. It doesn't get lost in a lot of electrons floating through a computer," he explains.

Gallagher agrees that systems should assist, but not drive, the quality process. He even concedes that complex systems can occasionally subvert the process by imposing too much complexity. In fact, right now the company is wrestling with installing a new manufacturing resource planning II system but is concerned that the approach might actually make it more difficult for people to understand, change and improve processes.

Overall, Nashua doesn't expect miracles from its information systems and avoids buzzwords and catchphrases such as "quality circles" and "total quality management." You won't find a corporate quality program with a catchy name here, and the company has never applied for the coveted Malcolm Baldrige National Quality Award.



Nashua's Gallagher says information systems should assist quality process

But no matter what, the quality effort goes on — even when Nashua's stock price plunged from \$37 to \$20 this year because of a research and development failure at one of its facilities in Santa Clara, Calif.

"Quality isn't a contest you win just once. It has to be ongoing," Gallagher explains.

Marenghi is a Boston-based free-lance writer.

35  
\$5K  
MIPS

(Can Sun do that? Nope.)

partment had little to do with these efforts. Today, technology professionals are heavily involved in helping the \$590 million corporation meet current quality goals.

The turning point came four years ago, when director of MIS Tim Gallagher launched a five-year strategic plan for IS decentralization. Gallagher, who oversees IS for each of the company's nine divisions, says he saw central concentration of the function as a barrier to change and quality improvement.

"It used to take us two days to process a telephone order," Gallagher says. "Now, [through decentralization] it takes us three minutes."

Formerly, Nashua's centralized information systems could process only data common to all divisions. Local systems augmented the centralized system,



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# Stanley hammers on quality

Tool maker focuses resources on applications to improve quality

BY CATHERINE MARENGHI

"We are in a permanent state of dissatisfaction." That's how James Gustafson, vice president of information systems at The Stanley Works, describes his company's philosophy on quality.

The \$2 billion tool and hardware manufacturer based in New Britain, Conn., has no for-

mal companywide quality program in place and no special staff devoted to quality management. Instead, Gustafson says, quality is part of every job.

For IS, that means focusing the department's annual \$30 million operating budget and staff resources on key applications aimed at improving quality. A good example is the firm's recent investment in a warehouse

management system. Designed to promote "perfect shipping," the system uses bar-code readers, weight-verification systems and a host of other technologies to improve accuracy and reduce manual errors.

Stanley is also investing heavily in the manufacturing planning process to improve responsiveness to customer needs. On-line integrated MRP II systems help ensure that the right product is being manufactured in the right quantity at the right time. A salesforce automation system, designed to provide speedier and more accurate answers to customer questions about orders and shipments via handheld terminals, is in pilot testing.

A heavy user of electronic data interchange (EDI), Stanley takes 65% of its orders through direct links with customers. Cut-



Stanley Works' Gustafson: Ensuring quality should be an inherent part of every job

ting out paper orders has significantly reduced manual errors, Gustafson says. So successful is the program that the company plans to extend EDI partnering to freight carriers so that shipments can be tracked right to the

customer's dock.

None of this comes inexpensively. Capital expenditures accounted for two-thirds of the \$30 million IS budget last year. While equipment purchases have eliminated some jobs, Gustafson says, that's not how he measures return on investment. "Quality always pays for itself," he says.

The company keeps its informal quality effort alive through steering committees within business units. A corporate-level committee includes the chief executive officer—but not as leader.

While company quality efforts are voluntary for departments, a newsletter and a "status board" in the cafeteria report on what the teams are achieving, creating a healthy measure of competition.

Efforts like this are aimed at promoting a grass roots-level buy-in that, according to Gustafson, is necessary for quality programs to work.

"Quality was not a top-down directive," he says. ■

## Miles building quality from an IS foundation

Information systems are providing a solid footing for quality efforts under way at Miles, Inc., where IS has been asked to play a leadership role in bringing quality concepts to the \$2.5 billion pharmaceuticals firm based in Elkhart, Ind.

This month, IS will face an even greater challenge, as four sister companies of Miles will be merged after 15 years of independence. Management wants the IS group to be the catalyst for a Total Quality Management (TQM) program for the new, combined \$6.5 billion firm.

It's been a long road, says Vice President of IS and Logistics John Tremese, whose staff is split 60-40 between the firm's headquarters and operating divisions. He says developing strategic applications within business

from the practice of having workers complain in small groups about the environment or the limitations of technology, Tremese explains.

Tremese spent six months studying various quality programs such as Deming and Juran, before choosing a program by The Quality Improvement Co. in Cupertino, Calif. Soon after, executives went to training classes, then returned to train other IS employees.

The 28 quality improvement teams that were subsequently formed have completed more than 300 quality projects, Tremese says. IS team members identify problems, defects and barriers in such areas as applications development, requirements planning and data center management as well as work on fixes. Problems that cannot be solved by a single team are escalated to a cross-functional team spanning several departments.

One typical project that involved re-engineering the data center's on-line report generation system saved Miles \$200,000 in out-of-pocket expenses, Tremese says.

The quality efforts at Miles are now spreading worldwide. A year ago, all transportation, central warehouse and import/export logistics operations came under Tremese's management, and he instituted a TQM program. To date, more than 300 employees have been trained in TQM concepts and functions. Tremese has been asked by other, non-IS managers to help train their departments in quality procedures.

"All of a sudden, the things we were doing in IS that were perceived as being rather strange by other employees have been legitimized," he says.

ALICE LAPLANTE

ONE TYPICAL PROJECT that involved re-engineering the data center's on-line report generation system saved Miles \$200,000 in out-of-pocket expenses.

groups has not always been easy for IS. When efforts started in 1986, IS felt it was not making enough of a contribution or impact. A big problem, Tremese says, was an unclear understanding about what real value IS brought to business units.

Tremese says the staff needed to stop making technology an end in itself and, more importantly, needed to convince company business heads that IS focus had shifted away from strict technical concerns.

At the time, Miles had a "voluntary improvement program" in which employees could serve on improvement teams—a kind of quality circle—to talk about problems and concerns within IS. The idea was to get away

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(New Sun SPECs? Not this hot.)



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# Statistical software rings in quality

Emphasis on quality has loosed flood of software products to help firms improve their procedures

BY MEL MANDELL

Whether it involves squeezing precise quantities of spicy smoked beef into Slim-Jim casings or finding troublesome parts in Frigidaire, Inc. refrigerators, spotting and fixing quality problems is a hot topic.

The quality craze has created a healthy minimarket for specialized software designed to help companies improve products and processes. Dozens of vendors and packages are available, many focusing on statistical analysis.

For instance, "Quality Managers" from SPSS, Inc., in Chicago, is a \$6,000, DOS-based real-time process-control package that the company says provides historical trend data on products. It is used by electronics makers, as well as by food processors such as RJR/Nabisco, Inc., the company says.

Other leading sources of high-functioning statistical software include Bolt, Beranek and Newman, Inc. in Cambridge, Mass., and SAS Institute, Inc. in Cary, N.C. Low-end packages are sold by Scientific Programming Enterprises in Haslet, Mich., such as "Plot-It," which retails for \$295.

Users of such products report favorably. At Goodman Foods,

Inc., the nation's leading producer of snack meats, statistical software helps eliminate waste and develop new products, says Tom Castater, manager of the quality control department at the company's Garner, N.C., plant.

## Life made easier

Castater says the reason Goodman chose Bolt, Beranek's RS/1 and RS/Explore over three other products was because of its ability to speed up and simplify statistical trend-spotting on the manufacturing line. The company runs the software on a Digital Equipment Corp. Microvax tied to a DEC terminal server and connected to VT 330 and 340 terminals. RS/1 was installed more than 13 months ago; RS/Explore was added six months later.

Before the software was installed, laboratory technicians hand-plotted between 100 and 150 key parameters on meat quality, fat content, moisture content and protein content on raw materials each day. The automated program now generates up to 1,300 charts a day. Having good data immediately

available makes a big difference in quality, Castater says. For example, workers used to control the weight of Slim-Jim fillings by using a scale, which wasn't always accurate or uniform.

Today, weight-deviation charts are posted daily at the line where Slim-Jim snack-meat casings are filled, a system that helps keep machine-filling on target, Castater says. Workers can now see when and by how much they stray from the specified weight.



Besides random weighings by supervisors are entered and plotted on the software. Problems they stray from the specified weight.

pinpointed by RS/Explore are brought to the attention of plant managers at weekly meetings.

**Cool savings at Frigidaire**  
Software packages used to raise quality and productivity while lowering scrap have also become popular. Vendors say these "design-of-experiment" packages,

which reportedly help manufacturers optimize complex processes, apply to any product, from discrete components to a gas, liquid or solid.

One example is Bolt, Beranek's Catalyst, an Apple Computer, Inc. Macintosh-based system that sells for \$2,495. Plant engineers and other users enter various parameters, then adjust each to graphically simulate the impact of other statistical parameters.

Ed Stiff, group quality director at Frigidaire, uses SAS/QC from SAS Institute to pinpoint quality problems for the firm's line of durable goods. A unit of Sweden's AB Electrolux, Frigidaire grosses about \$6 billion a year, making it the nation's third-largest producer of home appliances.

The firm hopes to raise margins even more by cutting down on home-warranty repairs.

Under the old system, generating statistics was a big chore. Warranty claim records for Frigidaire's appliances were stored in five different databases maintained on a leased Burroughs

Corp. mainframe. Products from the now-consolidated Frigidaire, Gibson, Kelvinator, Tappan and White-Westinghouse product lines are now assembled with many common parts in the same plant in Dublin, Ohio. Stiff says consolidation of each line's quality statistics into one comprehensive database was a key step.

The replacement system, which runs on IBM Intel Corp. 80386-based personal computers connected to an IBM 3090E mainframe, costs \$300,000.

However, Stiff says the many payoffs have already outweighed the drawbacks. The new approach has already saved the firm about \$500,000, mostly by eliminating the \$50,000 cost for staffing the scrapped Burroughs system. The cutter also halved the number of data-entry clerks from four to two, he says.

Even greater savings have come in service calls, but Stiff declined to elaborate. Finally, the firm says, customers are more satisfied.

With global competition increasing, Stiff says, the firm is hoping information technology will result in better quality to enable worldwide expansion, cut costs and boost profitability. ■

Mandell is a free-lance writer based in New York.

## Quality visits Washington

BY KRIS HERBST

The infant movement to use technology in improving quality has even spread to the U.S. government.

Officials say Information Resources Management (IRM) offices are just starting to help other organizations in the federal government implement Total Quality Management (TQM).

They are taking a "cautious, wait-and-see approach to implementing TQM," says Theresa Carroll, She's chair of the new Federal Interagency Council on TQM in IRM, an agency formed under the auspices of the Federal Information Resources Management Policy Council to create a foundation for government-wide quality improvement.

Given the government's heavy emphasis on customer service, it's surprising that information technology has not been seen as a crucial component in quality in federal programs before now, says Ian Littman, director of federal TQM services at management consultant firm Coopers & Lybrand.

Littman says passive IRM departments are frequently opting to let noncomputer operations

begin TQM efforts. For example, in U.S. Department of Defense industrial activities, quality is pushed by workers who repair ships and planes.

Still, some federal IS departments are taking a more aggressive approach to TQM. NASA, for example, is looking hard at data-oriented activities across projects and programs and how they "tie together," says Wally Keene, NASA's IRM administrator.

It's IRM's task to work with scattered groups to identify and discuss common needs, Keene explains.

The approach is paying off: The agency's IRM office recently helped NASA's space centers save 60% — or several million dollars — on mainframe purchase prices by pooling procurements for four space centers.

Big savings — \$19 million and 47 man-months — were also realized by combining supercomputer procurements from the Lewis Research Center in Cleveland and the Goddard Space Flight Center in Beltsville, Md., Keene adds.

Herbst is a free-lance writer based in Washington, D.C.

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(Still thinking Sun? Don't think so.)

These days, technology has to serve everybody. The trouble is, everyone wants technology to do something different.



IS managers, for instance, are apt to put a very strategic spin on things. That's because they're charged with



delivering information throughout the enterprise, integrating the company's computing and communications resources.

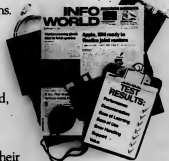
CIO's tend to look at the whole enterprise another way.



After all, they're tackling some of the very trickiest issues in business. Like how to best use

technology to produce the greatest business management gains.

Department managers, on the other hand, have to focus on doing just what their name implies. So they're more concerned with the productivity issues in their own backyard,



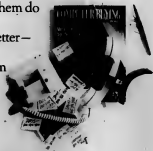
their local area networks, and generally making sure their department is happy and humming along.

End users, however, have a different perspective entirely. They see the

world from their desktop.

They want whatever helps them do

what they do better—while giving them access to the rest of the work-group or a mainframe.



**If there were only one kind of computer buyer, we'd only have one computer publication.**



Then there's senior management. To them, technology is one of the best ways to gain a strategic,

competitive advantage. Or, at least, it better be.

The point is, every-

body's involved. All these groups influence each other. That's why, today, there's no one person who's responsible for



buying technology for the many. Instead, in the



networked corporation, there is a network of people who are responsible

for buying and implementing technology, each responding to different needs and demands.



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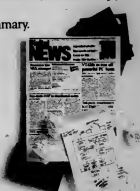


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# Next to NeXT, 486 PCs pa

No doubt about it, the NeXTstation™ computer is a knock-out. But appearance is only a small part of the package.

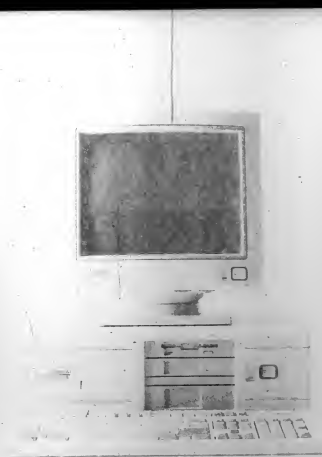
In fact, price/performance is where it really stands out. Especially against

the 486 based PCs (see chart).

This should come as no surprise when you consider the 68040 microprocessor inside the NeXTstation. Its independently operating caching system provides better sustained performance levels than the i486. And its powerful multi-bit manipulation instructions allow for easy GUI design. Not to mention



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Motronics 640	NeXTstation	15	\$4,995	\$333
Total 486	Compaq Deskpro	14.7	\$12,999	\$884

The NeXTstation tested here is 17" MegaPixel Display™ with 8 MB memory and a 500 MB (fixed disk, sparse in NeXT Computer Inc. "The NextPro has a 12" Color MegaPixel Display™ with 8 MB memory and a 500 MB (fixed disk, sparse in NeXTstation Ltd. Prices quoted are manufacturer's list prices and are subject to change.

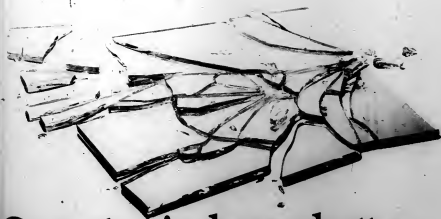
# Against Hewlett-Packard,



Fast windowing performance and low cost aren't mutually exclusive terms. Even in a workstation. The HP Apollo 425e

is an excellent case in point.

Quite simply, the 425e can run more simultaneous applications, more efficiently than the Sun<sup>®</sup> SPARCstation<sup>™</sup> ELC. Just check out the Windowing XII performance. The 425e clearly outperforms the SPARCstation (see chart). And at a price/performance point that blows it away.



# Sparc's windows shatter.

Then again, the 425e is a 68040-based machine. And the 040 incorporates RISC-like features such as integer and floating

point pipelines, single-cycle execution, and load and store optimizations.

So now people who need high-performance windowing, local processing power, fast data analysis, crisp graphics and versatile networking capabilities can have it all with an HP Apollo workstation. Without having to pay the price.

The Workstation Market - \$Windowing X11 Performance 040 vs. SPARC				
Microprocessor	System	Windowing X11 Perf (ops/sec)	System Price	Price/Perf
Microware 040	HP Apollo 425e	11,000	\$5,490	\$0.50
SPARC	SPARCstation ELC	6,500	\$4,995	\$0.77

\*Based upon X11 performance (window creation and 800x800 window management) publicly available benchmarks: HP Apollo 425e configuration is 21 MHz, 2 MB 68040, 10" graphics monitor. SPARCstation ELC configuration is 11 MHz, 2 MB 88040, 12" monochrome monitor. Prices quoted are manufacturer's list prices and subject to change.

# Head to head, Bull decks



The Bull DPX/2 Model 250 is a multi-user UNIX<sup>®</sup> system that gives you a wide range of choices. It's versatile, operating as a workgroup server, a departmental

processor or an all-purpose system for small and medium sized companies.

It's powerful, thanks to a Motorola 68040 microprocessor at its core. With a burst interface on its bus controller, the 040 rapidly shuttles massive amounts of data on and off the chip. That translates to sustained peak performance in a demanding multi-user,



# the competition.

multi-functional environment.

So when it's put through its paces against MIPS RISC-based machines like the DECsystem 5100, the Bull DPX/2 is

awesome. Weighing in with 19.5 AIMS versus the DECsystem's 17.5. And costing nearly \$900 less per AIM (see chart).

With that level of price/performance, it's no wonder Bull's Motorola-based server family has already sold over 25,000 multi-user systems. And more and more computer professionals are sold on Bull computers every day.

The Commercial Market—\$AIM D40 vs MIPS			
Microprocessor	System	System Price	Price/Perf (\$ per AIM)
Motorola D40	Bull DPX/2 Model 250	19.5 \$26,290	\$1,348
MIPS R3000	DECsystem 5100	17.5 \$30,940	\$2,282

The Bull DPX/2 250 was configured with 32 MB of RAM and 10 800 BPS. The DECsystem 5100 was configured with 32 MB of RAM and 10 800 BPS. All prices are in US dollars. All prices are manufacturer's list prices and are subject to change.

# And as for Macintosh, there

When the first Apple® Macintosh® appeared on the scene, it radically changed the face of the personal computer marketplace. And now Apple is re-defining the



high end of the PC market with the Macintosh Quadra™ 700 and 900 computers.

Supporting up to 20 megabytes of RAM, the Macintosh Quadra 700 may be the most powerful personal computer ever to sit atop a desk. And with support for up to 64 megabytes of RAM, the Macintosh Quadra 900 is the most expandable Macintosh yet.

\*See System Performance study published in October 1992 comparing the new Quadra 900 to the Macintosh Quadra 600, performed with the Intel 486 333, 375, and 500. Better than the Compaq Deskpro 486/333, and 375. Better than the ICL 486/333 system measuring the time taken to run some product names are trademarks or registered trademarks of their respective companies.



# e's simply no comparison.

Both come with built-in networking support. And both support all Apple displays and up to 32-bits of color.

But speed is their real distinguishing feature. The graphics architecture is faster than ever. They have enhanced SCSI and NuBus<sup>®</sup> capabilities. And each contains a Motorola 68040. As a result, they run most applications almost twice as fast as the

powerful Macintosh IIx. In fact, in a recent independent study, the Macintosh Quadra 900 outperformed 33 MHz and 50 MHz 486-based systems by as much as 63%.

The speed, graphics and flexibility of the Macintosh Quadra computers set them apart from any other personal computer. In other words, Macintosh is, once again, in a class by itself.

# So when you're looking for real power in a computer, consider the source.

No matter which criteria you use. Whether you're evaluating by MIPS, XII Performance, AIMS, or simply the time it takes to run an application. The systems that come out ahead in price/performance are powered by the 68040. The microprocessor that has pushed on-chip integration to a new level.

Add to that Motorola's reputation for technical support at every level. Hundreds of Field Application Engineers and Systems Engineers worldwide have a



detailed understanding of the 68040. They stand ready to aid in the most intricate system design, or answer the most basic questions.

Finally, consider the fact that Motorola was a winner of the first Malcolm Baldrige National Award for quality.

All in all, you know what you're getting when you go with an 040-based system. And all we can say is, more power to you.

For additional information on the Motorola 68040, call 1-800-845-MOTO.



**MOTOROLA**





# IN DEPTH

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Illustrations (top to bottom): Mark Fisher, Viki Kanda, James Seiberg and Philip Anderson

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# COMPUTER INDUSTRY

## NATIONAL BRIEFS

### FIT to be tied

► Orlando, Fla.-based Newtrend, a company that targets outsourcing services at financial institutions, announced late last month an agreement in principle on a multiyear, \$40 million contract with Financial Information Trust (FIT). If it closes, the FIT deal will be Newtrend's eighth multimillion-dollar outsourcing agreement in the past twelve months.

### On the wings of a Dove

► The chairman of Austin, Texas-based Microelectronic and Computer Technology Corp. (MCC) has been appointed as a special partner in a strategic planning and investment banking firm targeting technology companies. Grant Dove will continue as head of MCC after he resumes his duties at Menlo Park, Calif.-based Technology Strategies & Alliances.

### Vendor spender bender

► Local-area network equipment maker Ungermann-Bass, Inc. last month acquired a 50% equity interest in Network, Inc., a Dallas-based LAN vendor. The two companies will continue to operate independently, according to U/B. Meanwhile, Genicom Corp., a Huntsville, Ala.-based maker of printers for large systems, will enter the nonimpact printer market by acquiring Kasek Corp.

Continued on Page 72

## Citrix hopes to grow in IBM's shadow

Former OS/2 head tailors firm's multiuser version of the operating system to suit customer needs

BY ROSEMARY HAMILTON  
OF WASH.

CORAL SPRINGS, Fla. — While many industry analysts have been busy predicting the downfall of IBM's OS/2 during the last several months, Edward Iacobucci has been building a company on it.



### Potential prosperity

*Citrix Systems, Inc. hasn't closed the door on Windows — but it is shaking its growth on IBM's OS/2*

A solid product offering: a multiuser version of OS/2.

An impressive pedigree: Chairman Edward Iacobucci formerly headed IBM's OS/2 design team; venture backer Servin, Rosen, Bayless Partners.

A hedged approach: VAR market focus sets Citrix at one removed from desktop OS wars.

Source: Citrix Systems, Inc. CW Chief Staff Writer

Iacobucci, who headed the OS/2 design team at IBM, is now chairman of Citrix Systems, Inc., which began marketing a multiuser version of the operating system in February 1991.

Multiuser is aimed at customers who want both the ease of use of a desktop environment and also the support and management capabilities that tradi-

tionally come with host-based computing. As in the mainstream computing days of old, Multiuser allows a customer to support multiple users on terminals attached to a host system. In this case, however, the host is a low-cost microcomputer.

"The concept was to take OS/2 and extend it to a more traditional area with shared terminal support," Iacobucci said. "It's the best of both worlds. It has the features and benefits of a low-end Unix system without all the baggage. It has top-notch security and system management with the look and feel of DOS."

The concept seems sound and, for some initial users, Iacobucci's claims are holding true. "We've put some horrible stress tests on it, and it doesn't slow down," said Chris Crawford, president of Applied Micro Technology, Inc., a reseller in Austin, Texas. He said the company, which sells banking applications, recently added Multiuser to its roster of products. The firm also provides banking systems based on Novell, Inc.'s Netware.

However Citrix, which is based here, has not exactly exploded onto the market. According to Iacobucci's numbers, the company has signed on about 250 value-added resellers (VAR)

and approximately 100 users since the debut of its "Mac" user operating system. The OS/2 market is its primary target, while end-user accounts will be picked up on an "opportunistic basis," Iacobucci said.

### Uphill battle

Iacobucci considers this a good first year, but some industry observers said Citrix could have an uphill battle because many users do not want to consider yet another low-end operating system. "I would have to be somewhat skeptical about someone coming out with an OS/2-brand-

ed product right now," said Judith Harwitz, president of Harwitz Consulting Group in Newton, Mass. "Users are not only skeptical about OS/2, but of new operating systems in general. Users may be somewhat afraid to go with an unknown at this point."

Nevertheless, the company has at least three factors working in its favor. First, it has a solid product offering, according to some users contacted recently.

"I think it's great," said Jim Hayes, information systems director at Taylor Medical, Inc., a

Continued on page 72

## Close to the vest



Not surprisingly, Edward Iacobucci does not like to say too much about IBM or the various controversies that have swirled around OS/2. After all, his company, Citrix Systems, maintains a relationship with IBM, and most would

firmly agree it is not wise to say too much about their bigger partners.

Iacobucci said he cannot discuss the specifics of the relationship, other than to say "we are in active discussions with them on a variety of products."

He also steered clear of the strained relations between former OS/2 collaborators IBM and Microsoft Corp.

"Our focus is on what the customer needs," he said. "We try not to get involved with the more emotional aspects of the discussions that are going on."

He would rather stay focused on the new firm, which he founded in 1989. Iacobucci, who had been vice president and chief technology officer, was named chairman late last year.

His additional responsibilities will require him to become an "evangelist on the product and the company," he said.

ROSEMARY HAMILTON

\$ 1,557,692,312

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over **\$1.5 Billion** on  
Information Technology — representing nearly half of  
all spending in the last seven days.

COMPUTERWORLD

## INTERNATIONAL BRIEFS

## Supercomputer license

► Japanese giant Fujitsu Ltd. will license its Unit-based supercomputer operating system to German firm Siemens AG, according to a recent report in the European business press. Siemens sells almost all the Fujitsu supercomputers sold in Europe on an OEM basis, but under the new agreement, customers will be able to get both hardware and software from Siemens, the report said.

## All on board

► Starting Jan. 1, 1993, firms will have the right to bid across European Community (EC) borderless telecommunications service contracts, following last month's adoption of an EC directive affecting all service tenders worth more than \$250,000. The directive effectively fills in a major gap in Community rules by subjecting to open tendering procedures all open tenders not already subject to existing EC rules on public works and public procurement contracts. Like its predecessors, the legislation will require the public authorities tendering service contracts to follow open and non-discriminatory procedures such as publishing a tender, observing time limits for tenders and publishing award winners.

## On the go

► Telefontelekomlaget L.M. Ericsson said it will sign an initial contract this year to develop and install a cellular mobile system in the Tokyo metropolitan area. The Sweden-based firm declined to disclose the value of the contract, which will be signed with the Tokyo Digital Phone Co., a consortium that includes Japan Telecom, Puctel and East Japan Railway.

## Exports curtailed

► When trade friction mounted several years ago over the export imbalance between the U.S. and Japan, the Japanese curtailed exports by setting up plants in the U.S. Now, with criticism focusing on Japanese corporate infiltration of the U.S. market, the pressure is on to export U.S.-made goods. Mitsubishi Electric Corp. and Matsushita Electric Industrial Co. both plan to ship overseas microchips made at their U.S. plants. Mitsubishi announced it would export about one-third of its 1-bit dynamic random-access memory chips produced at its Durham, N.C., factory to Japan, and possibly to Europe as well. Matsushita is said to have a similar plan.

## Tech firms score big as entrepreneurs

BY NEILL MARGOLIS  
OF STAFF

It may have been a relative bumper in the big leagues, but the second half of the past decade was a banner period for technology firms in the entrepreneurial sector. This year's *Inc.* 500 boasts 163 technology company entries—including the top-ranking company and two more in the Top 4.

The leader of the pack: 6-year-old Gateway 2000, a personal computer manufacturer based in N. Sioux City, S.D. In addition to copying top honors, firms offering products or services targeted exclusively at PC users accounted for approximately 10% of the *Inc.* 500. Milwaukee-based Computer Bay, placing at No. 309, franchises PC dealerships.

One reason for the PC prevalence, perhaps, emerged elsewhere in the research: 73% of the chief executive officers interviewed for this year's listing reportedly make daily use of a PC.

A whopping 40% of the tech-

nology firms that made this year's 500 were fueled by software-related products or services.

Published annually by *Inc.* magazine and widely viewed as the Fortune 500 analog for smaller companies, the *Inc.* 500 measures revenue growth of small, privately held U.S.-based companies over a five-year period—in the case of the 1991 listing, the period extending from 1986 through 1990. For survey purposes, "small" is defined as between \$100,000 and \$25 million in revenue as of the end of the first measured year.

This year's strong technology presence on the *Inc.* 500 comes at a time when the spotlight is trained on the entrepreneurial business model.

For one thing, industry observers have widely speculated that one result of the recent epidemic of computer industry layoffs will be a new wave of entrepreneurship.

In addition, IBM's recently announced reorganization into small, autonomous business units is intended to spawn entre-

## THE TOP 10 LIST

The highest-ranked tech firms on the 1991 *Inc.* 500 list boasted the five-figure growth rates that are so often the exclusive preserve of the young, small and often elusive

<i>Inc.</i> magazine ranking	Company	Sales growth, 1986–1990 (Percent of increase)
1	Gateway 2000, N. Sioux City, S.D. Manufactures and sells PCs	36,469%
2	American Magnetics, Norcross, Ga. Designs and manufactures computer motherboards	23,850%
4	Technology Works, Austin, Texas Designs and manufactures computer memory add-on products	17,154%
9	Diamond Flower, W. Sacramento, Calif. Manufactures and distributes PCs	11,360%
12	Leasing Solutions, San Jose, Calif. Leases computer equipment	9,042%
13	Etham, Evanston, Wyo. Manufactures and distributes hard drives and monitors	8,723%
14	WIN Laboratories, Manhattan, Va. Manufactures microcomputers	8,630%
18	Shiva, Cambridge, Mass. Manufactures and designs networking products	7,959%
22	Thomas-Conrad, Austin, Texas Manufactures LAN products	6,869%
23	Starpak International, Denver Services and fulfills software	6,493%

Source: *Inc.* magazine

preneurism, foster invention and cater to the customer's needs.

The relatively small size and, overwhelmingly, recent start-up

status of the companies that make the *Inc.* 500 allow for the kind of stunning five-year growth figures a giant cannot attain.

## Economy hits small firms

HINGHAM, Mass.—The toll of a tough economy often makes headlines when large companies are forced to make cuts, but smaller firms are facing hard facts as well. One such firm, Software Developer's Co., has begun a major restructuring that has resulted in a more than 15% reduction in staff and the resignation of several executives.

The cuts reportedly will not affect programmers but are intended to consolidate support services such as shipping, receiving and accounting. In all, approximately 25 jobs will be eliminated, leaving 15 employees.

The restructuring-spurred charge against earnings could to-

tal as much as \$3.5 million, triggering a loss of approximately that amount for the third quarter, according to the company.

The firm also announced that Chairman Bruce Lynch and Vice President of Distribution Stephen Underdown had resigned. Stephen L. Watson, president and chief executive officer, was elected chairman and will fill Underdown's responsibilities until a replacement is named, the firm said.

Software Developer's is the parent of Solution Systems, maker of Brief, a popular programmer's editor, and The Programmer's Shop, a software tools catalog reseller.

## NATIONAL BRIEFS

## SIA report: Defects down

► According to a report recently released by the Semiconductor Industry Association, the industry has reduced the level of defects in integrated circuits used in military applications. The level of defects has fallen below the 100 parts per million (PPM) mark to approximately 40 PPM, according to the association's Quality Statistics Report on Military Integrated Circuits study. The association supplies more than 80% of the semiconductors purchased by the U.S. government for mil-

itary, space and other applications.

## Credit where credit is due

► The U.S. Congress has voted to extend for six months starting Jan. 1 a dozen tax credits, including the research and experimentation tax credit. The temporary research and experimentation credit has been extended annually since 1981, but late last month Rep. Dan Rostenkowski (D-Ill.), chairman of the House Ways and Means Committee, said last month that each of the 12 credits will be considered separately this year and will either be made permanent or scrapped for good.

## Citrix hopes to grow in IBM's shadow

CONTINUED FROM PAGE 71

medical supplies company in Beaumont, Texas, where Multimer has been installed for nearly a year. "I can take one box and support 40 users with good performance."

Second, Citrix has the backing of some big name venture capitalists, including Silver, Rosen, Bayless Partners. The company has raised \$6 million in two rounds of venture funding since its 1989 start and is currently raising its third round, Iacobucci

said.

Third, while the firm's product is closely tied to OS/2, Citrix's overall strategy is not. Its focal market is the VAR community, which repackages software and sells systems for specific customer needs. As a reseller, the market is less sensitive to the desktop operating system race that has pitted Microsoft Corp. and IBM against each other.

In addition, Iacobucci said, Citrix is defining itself more as a

multisystem system to compete against low-end Unix offerings than as an extension of OS/2.

"We don't portray ourselves as an OS/2 for LANs," he said. "We see ourselves as a more viable alternative to Unix."

Moreover, Iacobucci has not ruled out support of other technologies. The company is currently evaluating the possibility of supporting Microsoft's Windows New Technology in future versions of Multimer.

Nonetheless, Iacobucci has plenty of faith in OS/2's future.

The selection of OS/2 as the foundation of the Multimer product has obvious roots in Iacobucci's former job. He headed up the OS/2 design team at IBM and left the firm in 1989 because he wanted to run his own firm. "It's the start-up experience," he explained, "I saw others doing it, and it was something I wanted to do."

Iacobucci insisted that his departure resulted from his personal ambitions rather than any disagreement with IBM's direction for the operating system.





## "Our recent recruitment advertisement in Computerworld generated an exceptionally high percentage of qualified responses - more than double that of a local newspaper advertisement."

*- Rick Bawzel  
Staffing Manager and  
Regional Recruiting Coordinator  
GE Consulting Services*

GE Consulting Services, a subsidiary of the General Electric Company, is a leading provider of software solutions for complex information systems problems. Specializing in technology migration, new applications, software and user support, the company's 22 offices and 1500 employees service large Fortune 500 companies, as well as support internal G.E. activities. With such diversity, explains Rick Bawzel, Staffing Manager for the Atlanta Region and Recruiting Coordinator for the Southeastern Region, their hiring typically encompasses two or three technical arenas, never just one.

"Our business tends to focus on certain niches - on-line relational databases, CASE tools, and, with our newly launched PC Solution Centers, advanced PC development projects such as Microsoft Windows, graphics, and object-oriented technology. When it comes to recruitment advertising, we need a vehicle that reaches qualified professionals with very specific backgrounds in the CASE, database, and Unix arenas. To recruit high-level professionals with these specialized skill sets, Computerworld is our most viable advertising vehicle. With its industry-wide focus, I know people in Unix shops will see our advertisement as readily as people in IBM shops.

"Our recent recruitment advertisement in Computerworld generated an exceptionally high percentage of qualified responses - more than double that of a local newspaper advertisement. And, since we consistently receive qualified resumes five and six weeks after each advertisement runs, we know Computerworld has a long shelf life for generating responses. When I need to recruit strong talent in a cross section of leading-

edge technologies, Computerworld is by far the best answer.

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## MBA improves prospects but not pay

BY ALICE LAPLANTE  
SPECIAL TO CW

ALTHOUGH much lip service is paid to the idea that information systems employees need to know more about business, few organizations are currently backing up that talk by hiring MBAs for regular IS positions.

The MIS research center at the University of Minnesota recently completed a survey that asked 60 companies what kind of skills they sought when recruiting for IS positions. On a scale of 0 to 10 — where 0 represented strictly technical skills and 10 represented an MBA — the average score was 2.3.

However, there is evidence that this is changing.

"Fifty percent of the companies surveyed said they were moving away from their current hiring practices toward employing more MBAs within IS," says James Wetherbe, a professor at the University of Minnesota and director of the MIS research center there.

"With the changing role of IS people being more closely integrated into the business, it will be increasingly beneficial for any IS employee to have an MBA," says Joseph Wodashek, electronic data processing director at Waukesha Engine in Waukesha, Wis.

Moreover, an U.S. corporate

survey put more emphasis on using technology to achieve competitive advantage, many IS workers are moving out of centralized departments and into business units to forge closer relationships with users. For such positions, an MBA can be a very valuable degree, IS managers say.

"In the past few years, I've seen companies hiring technical MBAs to act as liaisons between MBAs and IS, with the idea that it's essential to have people who speak both languages," says Peter DiGiammarino, vice president of American Management Systems, Inc. in Arlington, Va.

"The integration of those two skill sets will be increasingly powerful," says DiGiammarino, who has an undergraduate degree in computer science and an MBA from MIT.

### Higher cost a deterrent

This integration of skills is just starting to happen, however. Increasing emphasis on business notwithstanding, most IS managers say they aren't willing to provide higher compensation — especially in these tough economic times — just for those three magic letters, all other things being equal.

"If an MBA is going to do the same job as a non-MBA, the company obviously isn't going to want to pay extra for that person," says Joyce Hunt, president of Hamilton Technical Personnel,

a recruiting firm based in West Hurley, N.Y.

IS managers and recruiters say an MBA is currently most useful to technical workers who wish to do the following:

- Advance from a technical to an IS management position.

- Go to work for an external systems consulting organization.

- Move into a non-IS business unit to act as a liaison between a corporate function and traditional IS.

- Make a complete career change into a corporate business position in finance, accounting or operations, albeit with technology skills as part of their management "tool kit."

For technical employees with management aspirations, an MBA makes a lot of sense.

Alan Mis, director of IS at American Steamship Co. in Buffalo, N.Y., worked his way up through the technical ranks at his department from a programmer position to manager of the department, picking up an MBA along the way.

"I thought it would enable me to do a better job as manager of a department," Mis says, adding that the MBA courses helped him in a number of ways, including analysis of financial issues.

Hunt says most of the requests for MBAs she gets come from the largest corporations — Fortune 500 or 100 firms — with huge centralized IS departments that want to groom MBAs for high IS management positions.

Another key IS opportunity for MBAs is an external consultant position. Universities say that their MBA graduates who specialize in IS tend to go to the large independent systems consulting houses such as Andersen Consulting.

"Only a small fraction are work-

ing for IS departments as such, yet a substantial proportion are doing IS-related work at consulting firms," says E. Burton Swanson, chairman of the IS area of the graduate business school at the University of California in Los Angeles.

Rick Nashlesian got his MBA from Indiana University and was recruited by IS consulting giant KMPG Peat Marwick in 1982.

"Many of these IS consulting firms have MBA-track positions where they exclusively hire people with graduate business degrees," says Nashlesian, who now runs his own software firm, Eden Systems Corp. in Carmel, Ind. One reason MBAs might be more suited for such work than

for hands-on IS jobs is that although an IS concentration within an MBA program provides a strong basic understanding of IS management issues, few specific technical skills are taught.

"Many consulting firms with MBA-track positions expect you to pick up whatever technical specifics you need while on the job," Nashlesian says.

Precisely because MBA programs provide so little hands-on systems experience, most IS managers say they still prefer technical expertise.

Frank Nestor, director of data processing at Summit Consulting, Inc. in Lakeland, Fla., is the only person in the data processing department with an MBA. Although he would be "favorably impressed" by a potential employee who had one under his or her belt, he says experience is what really counts.

"The business background can be very helpful — especially these days, when data processing has to work so closely with other departments," Nestor says. Still, he says, he looks more at technical expertise than an MBA when hiring or promoting.

"All things being equal, an MBA is certainly a good qualification to have if you are being considered for a promotion," says Jim Carlson, manager of human resources at Knorr Corp. in Troy, Mich. "But performance at a given job still is the top criteria for advancement."

Laplante is a free-lance writer based in Palo Alto, Calif.



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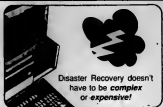
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## Disaster planners: Prices are more flexible than products

BY ALAN RADDING  
SPECIAL TO CF

**D**isaster recovery planning today means more than just keeping the data center operating. A new generation of contingency planning software expands the scope of disaster recovery to include total business recovery — such as keeping alive customer sales or service operations — and telecommunications network recovery, the voice and data links that are vital to a business' survival.

Contingency planning/disaster recovery software helps organizations collect and maintain the myriad of details about personnel, resources and tasks that are required to keep the organization functioning in the face of an emergency, be it a power outage, fire or flood. The software stores the information in the database and produces lists of who does what, when, where and how. The software also incorporates a formal methodology to guide users through the bewildering process of creating a disaster recovery plan.

Among the leading contingency planning software products are Total Recovery Planning System from Chi/Cor Information Management in Chicago; DP 90 Plus from Sungard Planning Solutions, Inc. in Wayne, Pa.; Recovery PAC from Computer Security Consultants, Inc. in Ridgefield, Conn.; Living Disas-

ter Recovery Planning System (LDRPS) from Strobl Systems in Plymouth Meeting, Pa.; and Compas from Comdisco Disaster Recovery Services, Inc. in Rosemont, Ill.

List prices for the leading products range from less than \$10,000 for a single-user license to more than \$25,000 for multi-user licenses, but users report a lot of price negotiation, particularly when buying multiple copies or corporate licenses.

"The price is highly negotiable. Every vendor is willing to deal," says Louise Hritz, contingency planner at Dollar Federal Savings Bank in Pittsburgh. Hritz says he selected Recovery PAC from Computer Security, although Comdisco, Dollar's host-site vendor, "offered us a great price."

### Focus on features

With all vendors willing to bend on the pricing issue, users generally focus first on the product itself. The most important features include the database, ease of maintenance, ease of use, flexibility, methodology and reporting.

All the major products are currently built on a relational database of some sort. Gone are the days when organizations built and maintained a disaster recovery plan on a word processor-based system. Relational database technology makes data input and maintenance much easier. For example, users want

to input data only once. When the inevitable changes occur, users want to make the change in one place and have it automatically reflected throughout the plan.

"You need a relational database, or maintenance becomes a nightmare," says Joseph Olivo, assistant vice president at the National Computer Bank of New Jersey in Maywood, N.J., an LDRPS user. He adds that it doesn't matter what kind of relational database it is. Nor does it matter, contrary to some vendor claims, if it is a true relational database.

After being assured of the relational character of the software, managers next want ease of use — from pull-down menus and context-sensitive Help to plain-English prompts, commands and querying. For most users, disaster planning is an occasional responsibility. "Ease of use is very important. People have to get around inside the product without knowing about programming," says Sue Velp, information systems disaster recovery coordinator at Total Petroleum, Inc.

Without a Help feature, users can easily get lost in a big disaster recovery program. "Compas requires that you understand how the product is laid out. They provide a chart to help you navigate, which I still keep taped to my

desk," says John Dorman, a certified disaster recovery planner at a large California bank. He puts up with the difficulty in using it because its methodology — a team approach — closely matches his own.

"I like the pull-down menus of Recovery PAC. It guides you through the program very well," Hritz says.

Paul Beim, security engineer at New York-based Metropolitan Life Insurance Co., found LDRPS easy to use. "We like the Help screens. They are context-sensitive."

Ease of use is particularly important in data collection. If data gathering isn't intuitively easy, users won't cooperate.

"LDRPS has a form shell that you can download to a disk and hand to users," Beim explains. Users run the disk, fill in answers to questions and send the disk back to incorporate the data into the plan — a no-brainer. Other systems offer a more cumbersome ASCII import/export process.

The complexity of disaster recovery planning requires that the software provide a methodology around which the organization can build its plan. All the products steer the user toward their particular methodologies.

Managers, however, need to match the particular methodology to the way the organization works. "We like the team concept of Compas and how it is based on recovery action teams," says Scott Colbertson, manager of security systems at Shred Services Center in Harrisburg, Pa., which provides data process-

ing services for several Blue Cross/Blue Shield plans.

Hritz, however, had just the opposite reaction: "The problem with Comdisco is you have to follow their methodology."

**Flexibility method**  
Flexibility is important. Too rigid a methodology becomes a hindrance.

"For instance, in an evaluation of five major packages, the U.S. Postal Service insisted that it be able to tailor the methodology, reports Steven Skolochenko, manager of automatic data processing security at the U.S. Postal Service in Washington, D.C. The Postal Service selected DP90 Plus, which has a nine-step methodology, but Skolochenko said he filed three products equally. He left it to the purchasing department to make the final pick based on who offered the best terms.

Users also want to customize reports. The preformatted reports in all the leading products cover the basics, Skolochenko says, but users typically want more.

"I want to create [recovery] manuals the way we want them," Hritz says. A popular reporting feature offered by some vendors is the ability to generate an individual recovery plan for each department.

Other issues of interest to users are the availability of telephone support and provisions for testing the plan. Most vendors also offer optional training and consulting. Although they will do the plan (most likely at a high cost) for you, you will still have to maintain it.

*Building is a free-lance writer based in Newton, Mass.*



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## The BoCoEx index on used computers

Closing prices report for the week ending December 27, 1991

	Closing price	Ask	Bid
IBM XT Model 069	\$375	\$450	\$375
AT Model 069	\$500	\$525	\$475
AT Model 239	\$550	\$650	\$500
AT Model 339	\$750	\$1,000	\$700
PS/2 Model 30 286	\$750	\$900	\$700
PS/2 Model 60	\$900	\$1,500	\$900
PS/2 Model 80	\$2,250	\$2,600	\$2,150
PS/2 Model 90	\$4,300	\$4,600	\$4,100
Compaq Portable II	\$400	\$500	\$375
Portable 286	\$900	\$1,000	\$800
Portable 386	\$1,800	\$1,800	\$1,500
SLT 386	\$1,300	\$1,300	\$1,000
LTE 386	\$1,000	\$1,300	\$900
Desktop 286E	\$850	\$1,000	\$800
Desktop 386/39	\$2,000	\$2,300	\$1,900
Apple Macintosh Plus	\$700	\$750	\$650
SE	\$1,010	\$1,050	\$950
HE	\$3,100	\$3,350	\$3,000
HC1	\$3,700	\$3,800	\$3,700
HPX	\$4,800	\$4,900	\$4,400

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# INDUSTRY ALMANAC

## NETWORKING STOCKS

*Kenneth Leon, analyst at Bear, Stearns & Co.,  
Dec. 18, 1991*

On the telecommunications side, the network switching and transmission market looks very strong this year. AT&T, which has strong global Postal Telephone and Telegraph relationships, stands to gain ground.

AT&T recently lost a \$1-billion contract at Ameritech, which chose Northern Telecom Inc. and Siemens AG instead. The failed deal probably will not set AT&T back much, said Chairman Robert Allen. He is bullish on new market opportunities in wireless switching systems, personal communications networks and broadband video and high-speed technologies.

AT&T stock was recently upgraded from buy to strong buy.

*Louis Giglio, Bear, Stearns, Dec. 18, 1991*

International growth remains stronger than domestic growth for Novell, Inc. However, the company's U.S. business increased 20% in 1991. Sales in 1990 were up 9% over 1989, which grew 15% over the previous year.

Novell's workstation operating system strategy will unfold this year, resting on several factors, including the Digital Research, Inc. merger. Plus, Novell's substantial investment in Unix International and its partnering with leading Unix vendors, including Sun Microsystems, Inc., will likely lead to Novell taking a more aggressive role in desktop Unix. Novell is rated buy, and Sun was recently upgraded from buy to strong buy.

*Richard Billy and Sam Kim, analysts at Prudential Securities, Inc., Dec. 23, 1997*

Synoptics Communications, Inc. just reported better quarterly financials than Cabletron Systems, Inc. for the first time. However, Cabletron officials said in a conference call that Synoptics' recent price cuts on networking gear have been a "competitive move."

Cabletron sales continue to be very strong. The stock is rated buy.

KIM S. NASH

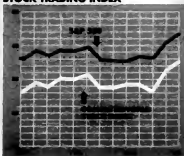
### What to buy

### Analysts are mixed on networking stocks

Company	Rating	Monetary Outlook
Cabletron Systems, Inc.	Neutral	Outperform
Chicom Corp.	Not rated	Outperform
Network Equipment Technologies, Inc.	Neutral	Outperform
Network Systems Corp.	Neutral	Aggressive buy
Novell, Inc.	Strong buy	Aggressive buy
Oriel Communications Corp.	Strong buy	Outperform
Proton, Inc.	Not rated	Outperform
Synagistics Communications, Inc.	Neutral	Not rated

CW Chart: Janet Rosenberg

## STOCK TRADING INDEX



## THIS WEEK'S HIGHLIGHTS

- Investors kicked off 1992 by giving gung ho on software stocks. Adobe Systems, Inc. rocketed 5 points last week to 67 1/2, and Borland International, Inc. shot up 6 points to close Thursday at 86.
- Knowledgeware, Inc. started the new year off with a 3 1/2-point jump last week, closing at 15 1/2. Meanwhile, rival Interleaf, Inc. gained 1 1/4 points to 17 1/2. Texas Instruments, Inc. also gained, moving up 1 point to 32.
- Among heavy losers, Pyramid Technology Corp. sank 3 points to 12 1/2 after preannouncing an impending quarterly loss attributed to the continuing worldwide recession. Other clunkers included Pictetcorp Corp., which lost 2 1/4 points to 45 1/2, and Stratus Computer, Inc.
- Hewlett-Packard Co., which is set to announce a new desktop workstation next week, rose 2 1/4 points to 56. Mine Computer Systems, Inc. dropped 1/2 a point to 9 1/2.

## Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, JANUARY 3, 1992

TOP PERCENT GAINERS	30-60	60-90	90-120	TOP PERCENT LOSERS	30-60	60-90	90-120		30-60	60-90	90-120
Company				Company				Company			
Chrysler Corp.	30.02	74.00	120.00	Telephon Systems	-17.08	-68.00	-120.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corporation	28.50	72.00	118.00	Aluminum Inc.	-16.25	-66.00	-118.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	27.50	71.00	117.00	Aluminum Inc.	-15.50	-65.00	-115.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	26.50	70.00	116.00	Pyral Technology	-15.00	-64.00	-114.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	25.50	69.00	113.00	Pyral Technology	-14.50	-63.00	-113.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	24.50	68.00	112.00	Pyral Technology	-14.00	-62.00	-112.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	23.50	67.00	111.00	Pyral Technology	-13.50	-61.00	-111.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	22.50	66.00	110.00	Pyral Technology	-13.00	-60.00	-110.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	21.50	65.00	109.00	Pyral Technology	-12.50	-59.00	-109.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	20.50	64.00	108.00	Pyral Technology	-12.00	-58.00	-108.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	19.50	63.00	107.00	Pyral Technology	-11.50	-57.00	-107.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	18.50	62.00	106.00	Pyral Technology	-11.00	-56.00	-106.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	17.50	61.00	105.00	Pyral Technology	-10.50	-55.00	-105.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	16.50	60.00	104.00	Pyral Technology	-10.00	-54.00	-104.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	15.50	59.00	103.00	Pyral Technology	-9.50	-53.00	-103.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	14.50	58.00	102.00	Pyral Technology	-9.00	-52.00	-102.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	13.50	57.00	101.00	Pyral Technology	-8.50	-51.00	-101.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	12.50	56.00	100.00	Pyral Technology	-8.00	-50.00	-100.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	11.50	55.00	99.00	Pyral Technology	-7.50	-49.00	-99.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	10.50	54.00	98.00	Pyral Technology	-7.00	-48.00	-98.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	9.50	53.00	97.00	Pyral Technology	-6.50	-47.00	-97.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	8.50	52.00	96.00	Pyral Technology	-6.00	-46.00	-96.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	7.50	51.00	95.00	Pyral Technology	-5.50	-45.00	-95.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	6.50	50.00	94.00	Pyral Technology	-5.00	-44.00	-94.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	5.50	49.00	93.00	Pyral Technology	-4.50	-43.00	-93.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	4.50	48.00	92.00	Pyral Technology	-4.00	-42.00	-92.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	3.50	47.00	91.00	Pyral Technology	-3.50	-41.00	-91.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	2.50	46.00	90.00	Pyral Technology	-3.00	-40.00	-90.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	1.50	45.00	89.00	Pyral Technology	-2.50	-39.00	-89.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	0.50	44.00	88.00	Pyral Technology	-2.00	-38.00	-88.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	0.00	43.00	87.00	Pyral Technology	-1.50	-37.00	-87.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-0.50	42.00	86.00	Pyral Technology	-1.00	-36.00	-86.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-1.00	41.00	85.00	Pyral Technology	-0.50	-35.00	-85.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-1.50	40.00	84.00	Pyral Technology	0.00	-34.00	-84.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-2.00	39.00	83.00	Pyral Technology	0.50	-33.00	-83.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-2.50	38.00	82.00	Pyral Technology	1.00	-32.00	-82.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-3.00	37.00	81.00	Pyral Technology	1.50	-31.00	-81.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-3.50	36.00	80.00	Pyral Technology	2.00	-30.00	-80.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-4.00	35.00	79.00	Pyral Technology	2.50	-29.00	-79.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-4.50	34.00	78.00	Pyral Technology	3.00	-28.00	-78.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-5.00	33.00	77.00	Pyral Technology	3.50	-27.00	-77.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-5.50	32.00	76.00	Pyral Technology	4.00	-26.00	-76.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-6.00	31.00	75.00	Pyral Technology	4.50	-25.00	-75.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-6.50	30.00	74.00	Pyral Technology	5.00	-24.00	-74.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-7.00	29.00	73.00	Pyral Technology	5.50	-23.00	-73.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-7.50	28.00	72.00	Pyral Technology	6.00	-22.00	-72.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-8.00	27.00	71.00	Pyral Technology	6.50	-21.00	-71.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-8.50	26.00	70.00	Pyral Technology	7.00	-20.00	-70.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-9.00	25.00	69.00	Pyral Technology	7.50	-19.00	-69.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-9.50	24.00	68.00	Pyral Technology	8.00	-18.00	-68.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-10.00	23.00	67.00	Pyral Technology	8.50	-17.00	-67.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-10.50	22.00	66.00	Pyral Technology	9.00	-16.00	-66.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-11.00	21.00	65.00	Pyral Technology	9.50	-15.00	-65.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-11.50	20.00	64.00	Pyral Technology	10.00	-14.00	-64.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-12.00	19.00	63.00	Pyral Technology	10.50	-13.00	-63.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-12.50	18.00	62.00	Pyral Technology	11.00	-12.00	-62.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-13.00	17.00	61.00	Pyral Technology	11.50	-11.00	-61.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-13.50	16.00	60.00	Pyral Technology	12.00	-10.00	-60.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-14.00	15.00	59.00	Pyral Technology	12.50	-9.00	-59.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-14.50	14.00	58.00	Pyral Technology	13.00	-8.00	-58.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-15.00	13.00	57.00	Pyral Technology	13.50	-7.00	-57.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-15.50	12.00	56.00	Pyral Technology	14.00	-6.00	-56.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-16.00	11.00	55.00	Pyral Technology	14.50	-5.00	-55.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-16.50	10.00	54.00	Pyral Technology	15.00	-4.00	-54.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-17.00	9.00	53.00	Pyral Technology	15.50	-3.00	-53.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-17.50	8.00	52.00	Pyral Technology	16.00	-2.00	-52.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-18.00	7.00	51.00	Pyral Technology	16.50	-1.00	-51.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-18.50	6.00	50.00	Pyral Technology	17.00	0.00	-50.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-19.00	5.00	49.00	Pyral Technology	17.50	1.00	-49.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-19.50	4.00	48.00	Pyral Technology	18.00	2.00	-48.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-20.00	3.00	47.00	Pyral Technology	18.50	3.00	-47.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-20.50	2.00	46.00	Pyral Technology	19.00	4.00	-46.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-21.00	1.00	45.00	Pyral Technology	19.50	5.00	-45.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-21.50	0.00	44.00	Pyral Technology	20.00	6.00	-44.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-22.00	-1.00	43.00	Pyral Technology	20.50	7.00	-43.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-22.50	-2.00	42.00	Pyral Technology	21.00	8.00	-42.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-23.00	-3.00	41.00	Pyral Technology	21.50	9.00	-41.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-23.50	-4.00	40.00	Pyral Technology	22.00	10.00	-40.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-24.00	-5.00	39.00	Pyral Technology	22.50	11.00	-39.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-24.50	-6.00	38.00	Pyral Technology	23.00	12.00	-38.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-25.00	-7.00	37.00	Pyral Technology	23.50	13.00	-37.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-25.50	-8.00	36.00	Pyral Technology	24.00	14.00	-36.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-26.00	-9.00	35.00	Pyral Technology	24.50	15.00	-35.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-26.50	-10.00	34.00	Pyral Technology	25.00	16.00	-34.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-27.00	-11.00	33.00	Pyral Technology	25.50	17.00	-33.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-27.50	-12.00	32.00	Pyral Technology	26.00	18.00	-32.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-28.00	-13.00	31.00	Pyral Technology	26.50	19.00	-31.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-28.50	-14.00	30.00	Pyral Technology	27.00	20.00	-30.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-29.00	-15.00	29.00	Pyral Technology	27.50	21.00	-29.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-29.50	-16.00	28.00	Pyral Technology	28.00	22.00	-28.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-30.00	-17.00	27.00	Pyral Technology	28.50	23.00	-27.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-30.50	-18.00	26.00	Pyral Technology	29.00	24.00	-26.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-31.00	-19.00	25.00	Pyral Technology	29.50	25.00	-25.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-31.50	-20.00	24.00	Pyral Technology	30.00	26.00	-24.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-32.00	-21.00	23.00	Pyral Technology	30.50	27.00	-23.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-32.50	-22.00	22.00	Pyral Technology	31.00	28.00	-22.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-33.00	-23.00	21.00	Pyral Technology	31.50	29.00	-21.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-33.50	-24.00	20.00	Pyral Technology	32.00	30.00	-20.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-34.00	-25.00	19.00	Pyral Technology	32.50	31.00	-19.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-34.50	-26.00	18.00	Pyral Technology	33.00	32.00	-18.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-35.00	-27.00	17.00	Pyral Technology	33.50	33.00	-17.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-35.50	-28.00	16.00	Pyral Technology	34.00	34.00	-16.00	IBM Corp.	14.8	17.5	183.00
Chrysler Corp.	-36.00	-29.00	15.00	Pyral Technology							



# Big Blue gaining in mainframe security

BY MICHAEL ALEXANDER  
CIVILIAN

Until recently, it took little more than the toss of a coin to decide which of the top mainframe security packages to install. Computer Associates International, Inc.'s ACF2 and Top Secret and IBM's RACF offer similar levels of protection and account for all but a small piece of the market.

However, an informal poll of users — backed by recent market research — suggests that RACF is gaining the upper hand.

Despite unanimous agreement that shifting from one mainframe security package to another is laborious and expensive, users cited various reasons for doing so.

Some said they believed IBM was better equipped to offer security products in a distributed environment that includes a wide variety of platforms and not just mainframes. Others said IBM was probably better able to develop security protection for DB2, its mainframe database.

Still others said implementing enhancements to Top Secret and ACF2 was troublesome.

"There is only one reason," said Robert Courtney, a security consultant in Fort Ewen, N.Y.

"In today's environment, Top Secret is a better package, but IBM is in a better position to adapt to the changing mainframe environment."

The suggestion that there is a shift in security packages in either direction is a "total inaccuracy," according to Ken Farber, research and development consultant at CA.

The primary security concern in today's mainframe environment is the proliferation of platforms and networks over wide geographic areas, he said. Neither CA nor IBM has delivered complete solutions to the problem, Farber added.

However, it appears that the users who switch are not concerned about that. They are el-

## Big two

Securing IBM mainframe sites is predominantly left up to a couple of familiar companies



clude the following roles:

- An 80M-byte hard drive upgrade for the LAOSX, expected this month. One PC director at a major East Coast insurer said his firm has been receiving LAOs with 80M-byte drives since last month and has been promised 120M-byte drives before June. Sources close to IBM denied that the firm will ship 120M-byte upgrades for the LAOs.
- A low-end, 5.5-pound notebook based on the Micro Channel Architecture bus, slated to ship at the end of next month. Similar to IBM Japan's PS/50note but with an internal floppy and a 40M-byte hard drive, this will initially use Intel Corp.'s 16-MHz 80386SX chip.
- A midrange release of a pen-based system that will weigh about five pounds, use a 20-MHz 386SL chip and run Go Corp.'s

ther spooked by IBM hints or simply believe IBM will be the jobber down the road of addressing various issues.

For example, this month, Charles Schwab & Co. in San Francisco will begin writing conversion routines that will take it to RACF after four years of running Top Secret, said Lloyd Cole, vice president at the Investment Services Division of the company. Cole estimated the process will take 12 to 18 months. He declined to say how much the switch will cost.

The lengthy and involved conversion is part of a strategy to move to a distributed computing and management environment, Cole said. "Our feeling, based on talking with CA and IBM, is that we'll be better positioned to move into an [Open Software Foundation Distributed Computing Environment and Distributed Management Environment] with RACF than we would be with Top Secret."

Moving from Top Secret to RACF is "under consideration" at Syntex (U.S.A.), Inc. in Palo Alto, Calif., said Edward Wagner, security manager in corporate information services. The reason is "fear, uncertainty and doubt" about the future, he said.

"CA has made major strides down the road to a platform-independent security strategy, and it is not likely to trail IBM, countered John Blackley, information security administrator at Capital Holding Corp. in Louisville, Ky., an ACF2 and Top Secret user.

Another reason to shift is that upgrades are difficult to implement, Wagner said, noting that the process is harder for larger installations.

However, some users and experts are baffled by these plans to move, given the similarity of the products and the complexity and cost of converting.

# IBM moves to bolster portable efforts

BY MICHAEL FITZGERALD  
CIVILIAN

ARMONK, N.Y. — Users watching IBM's moves in the portable market said the vendor's lackluster history in this arena, coupled with vicious competition, will keep it from making much headway with its planned bevy of new products.

"I'm skeptical; maybe the products will be great, but they'll be too pricey," said Jacqueline Byrnsch, personal computer coordinator at Jockey International, Inc.

She said Jockey — which is an IBM shop but uses portables from Toshiba America Information Systems, Inc. and NEC Technologies, Inc. — was not likely to buy IBM portables.

Sources said IBM is planning a multifaceted attack that will in-

Penpoint operating system. This is expected to offer four to eight hours of battery life.

- A third-quarter release of an active-matrix color laptop that will use IBM's 386SLX power management chip and a nickel-metal hydride battery, which will give it two hours of battery life.
- A fourth-quarter release of a sub-6-pound color notebook with a passive-matrix screen.

The bottom line, though, according to analysts, is that heavy IBM users will buy, and others will probably just kick tires.

"They'll sell these products into true Blue accounts, and if that's all they do, they'll get something like 8% of the market, and that's not bad," said Andrew M. Seybold, editor in chief at the "Outlook on Professional Computing," a newsletter in San Jose, Calif.

# NEWS SHORTS

## HP embraces Token Ring

Hewlett-Packard Co. took strides last week to improve the ability of its Unix-based reduced instruction set computing (RISC) systems to connect to IBM Token Ring networks. A longtime Ethernet stalwart, HP has announced support for the industry-standard Token Ring protocol with an adapter card for all HP RISC computers. The company will be reselling Madge Networks, Inc.'s Madge Smart 16/4 Extended Industry Standard Architecture Ringmode as a Token Ring network card. Ranging in price from \$1,295 to \$2,895 (depending on system size), the cards will be available this month for the Series 800 midrange RISC systems, in March for the Series 700 workstations and toward midyear for the HP 3000 Model 900s.

## Seagate loses ground in IBM suit

A federal judge in Minneapolis has granted IBM a preliminary injunction in its suit over high-tech trade secrets filed in October against Seagate Technology, Inc. and a former IBM product development manager. Both Seagate and former IBMer Peter I. Bonyard have been enjoined from "using or disclosing" technology that Bonyard helped develop at IBM. Bonyard is also prohibited from taking any position at Seagate that would involve him in the development, design or manufacture of products involving IBM's technology.

## United Telecom completes buyout

United Telecommunications, Inc. is acting on its option to buy the remaining 19.9% of U.S. Sprint Communications Co. from GTE Corp. The \$530 million transaction should be completed by Jan. 31. United Telecom merged its telecom services with GTE's Sprint and Telcel subsidiaries five years ago; United Telecom purchased a controlling interest in Sprint two years ago, with an option to purchase the rest by 1995.

## DEC slopped with \$2.5 million fine

The U.S. Commerce Department levied a \$2.4 million fine against Digital Equipment Corp., saying the company violated export regulations in 31 instances between 1986 and 1989. According to spokesman Mark Fredericksen, the fines stemmed from allegations that DEC shipped products worth \$19 million prior to receiving appropriate export licenses. He said the employees responsible are no longer at the company and that the shipments in question were not sent to any countries that were deemed a security threat.

## Justice security lapses rapped

A report released last week by the U.S. House of Representatives' Government Operations Committee said the U.S. Department of Justice has failed to conduct risk analyses, develop contingency plans and conduct adequate security training. The department has made some security improvements but still fails to meet the requirements of federal law, according to the report.

## Wang fattens its wallet

Wang Laboratories, Inc. is about to add \$11 million to its balance sheet from the sale of its Network Services Group to the UK's Cable & Wireless PLC. Wang is selling the 7-year-old unit, which provides wide-area network services, because it no longer fits the company's strategy, a Wang spokesman said. Network Services will remain in Lowell, Mass.

## Norhgate expands distribution

Norhgate Computer Systems, Inc. moved beyond mail order last week by forming a new division that moves the Minnesota-based company into such distribution channels as dealers, value-added resellers (VARs) and systems integrators. The company is actively recruiting dealers and VARs to carry its Intel Corp. 80386 and 1686 line of personal computers. It predicts business partnerships by midyear.

# U.S. sees industry growth in '92

BY GARY H. ANTHIES  
COWI GROUP

WASHINGTON, D.C. — Despite predicting a sluggish economy, the U.S. Department of Commerce expects that 1992 sales of computer hardware will produce the first real growth in four years, while revenue from computer software and services will continue to rise at double-digit rates.

Moreover, information services topped the agency's list of fastest growing service sectors.

year and 0.1% in 1990.

"While [5%] is a moderate growth rate... it marks the first positive growth since shipments peaked in 1988," said J. Michael Farren, the Commerce Department's undersecretary for international trade.

However, the anticipated rise in sales will not forestall a total computer industry employment drop from 235,000 to 225,000, following a decline of 15,000 workers last year, the agency said. And despite the bullish sales forecasts, Freitag said

products scheduled for introduction and with the likelihood of the release of some pent-up demand from users who have been sitting on their information systems wallets for two years.

**Temporarily optimistic**  
But the Achilles' heel of the Commerce Department projections may be the underlying assumption about the overall economy, developed last July — a projection some economists and users now see as optimistic.

Tim Jackel, MIS director at Northrup King Co., a Minneapolis-area firm supply company, said his firm would not be a big IS spender this year because it made major investments in new systems last year. But he said he expects IS spending in his area to rebound this year as the manufacturing economy improves.

Tim Miles, a senior analyst at the Commerce Department's Office of Computers and Business Equipment, acknowledged that the forecasts were put together at a time when there was more optimism about the economic recovery. "We still expect the spending on workstations, PCs and portables will be fairly good. The big question in the '92 forecast is to happen to the big-ticket items like mainframes. The [5% growth estimate] for mainframes may be somewhat optimistic," he said.

As for information services, the fastest and most healthy growth projections, U.S. providers face aggressive new competition from Europe and Japan, as well as considerable uncertainty over possible government actions on issues of privacy and intellectual property protection.

Revenue growth in data processing and networking services will be fueled in part by a continuing trend toward outsourcing, the report said. Expenditures on electronic data interchange will also drive growth.

computer companies will continue to find themselves locked in a profits squeeze.

Despite the expected sales growth and a forecast increase in exports, the Commerce Department said imports will grow faster, leading to a computer trade deficit of \$1.5 billion this year, after a near balance of trade in 1991.

The expected strong performance for the computer industry is based in part on an assumption that the economy here and abroad will grow this year, improving in real terms of 3% in the U.S., the agency said.

The report also said the industry is going into 1992 with substantially lower inventories than in 1991, with more new

## Rose-colored glasses?

*Revenues aside, the U.S. government is predicting fairly strong growth for the domestic information technology industry*

	1991	1992	% Change
Electronic information services	\$10.2	\$12.2	19.6%
Data processing and network services	\$35.6	\$40.4	13.5%
Computer professional services	\$48.4	\$55.3	13.9%
Computer hardware and peripherals	\$53.6	\$55.8	4.1%
Packaged software	\$20.5	\$23.2	14.3%

(Dollars are in billions, not adjusted for inflation)

Source: U.S. Department of Commerce

CW Group: Mike Hines

Similar good tidings for the computer industry come courtesy of Standard & Poor's Corp.'s annual overview of how various industries will fare in the coming year. Standard & Poor's said it expects the operating profits of computer manufacturers to jump 12% this year, after sliding 2% in 1991. Computer analyst Lawrence Freitag said the increase will come from an improved world economy, recent industry cost-cutting and restructuring and new product introductions.

In its annual analysis of 350 industries, the Commerce Department said the value of U.S. hardware shipments worldwide will grow 4% this year, following an estimated decline of 2.2% last

# OS/2, SAA will be 'out,' Windows 'in' this year

BY KIM S. NASH  
COWI GROUP

FRAMINGHAM, Mass. — Would-be Neutralsmid Technology Strategy Corp. (TISC) took their shots at predicting what 1992 holds for the computer industry, but mostly they played it safe, echoing forecasts from previous years.

General themes for '92 included such proclamations as proprietary systems dying while end users grab power from data center managers. TISC Vice President Frank Goss, however, laid out some of the more standard themes, he added.

Among other predictions, TISC, based here, went out on the following limbs:

- No more OS/2. IBM may have pushed OS/2 2.0 out the door before Microsoft

Architecture (SAA) will meet with a wrenching demise in '92.

If IBM has any sense at all, it will find a way to make reality and redesign SAA to incorporate multivendor standards, not just "what IBM calls 'standard,'" Goss said.

In its current incarnation, SAA is a mix of open and proprietary interfaces. An architecture called SAA will likely survive 1992, but it will be nothing like what is now available. Goss predicted. "Proprietary interfaces such as CICS and IBM's own SQL will take a back seat" to more standardized terms, he added.

• Users unite. Sure, observers have long predicted that users will band together and stand as a single mighty force against proprietary vendors, but it is real this time, Goss said. Vertical market-based user groups have

sprung up in the last year, spelling out open systems rules for vendors to follow.

• ACE in the hole — a 6-ft trench, to be exact. In-fighting among key members of the Advanced Computing Environment (ACE) consortium about who is doing what and how well will include the word, according to Goss.

• Mips Computer Systems, Inc. and The Santa Cruz Operation are already pointing fingers, each claiming the other is dragging out product delivery by being late with key components.

Meanwhile, Microsoft and Digital Equipment Corp. are laying groundwork for their own separate state at the reduced instruction set computing market.

"None of these vendors is standing still, but ACE is," Goss said.



Microsoft Corp.'s Windows New Technology (NT), but the few-months lead does not guarantee success, according to Goss.

IBM made good on its word to ship its 32-bit desktop operating system by year's end. But this means little compared with the huge installed base of Windows users, Goss said.

There are just plain times of waiting for OS/2, or NT will make right past OS/2 by year's end," Goss predicted.

• Bye-bye Banyan. The merger of Microsoft and Banyan Systems, Inc. would make good sense, Goss said. Banyan's Vines, which is called a sound network operating system, could bolster Microsoft's showing in that arena, where LAN Manager is a "fairly weak" product.

• R.I.P. SAA. Systems Appli-

an already competitive fire.

Users are changing their mainframe purchase plans somewhat. Instead of buying several machines for dedicated tasks such as production and testing, users will buy one huge computer that can be partitioned, said Susan Gannon, a senior analyst at Technology Investment Strategies Corp. in Framingham, Mass.

Peter Thurnett, IBM's director of enterprise systems marketing, said he believes the mainframe's changing role is "where the biggest growth is." Customers want to take their current functions and share work, to extend the range and reach of work loads as opposed to simply processing applications more efficiently.

# Plans reveal wider options

CONTINUED FROM PAGE 1

"I'm committed to doing some experimentation this year with Unix-based open systems."

Paul Prutzman, director of computing and customer services at Air Products & Chemicals Co. in Allentown, Pa., forecast "a slack-off in growth, but not a decline," in his company's use of mainframe millions of instructions per second during 1992.

Prutzman said he will concentrate on "de-bottlenecking" the mainframe by adding storage and memory to complement the IBM 3090 400R. His shop purchased in April 1991. Air Products will likely buy an S- or J-

class model on the used equipment market late this year or early next, Prutzman said.

"I think everyone's more aware of alternatives and the redistribution of computing work loads. I view that as a kind of rebalancing. But you can't dismiss overnight what it took 25 years to build," said Elaine R. Bond, senior vice president at Chase Manhattan Corp.'s Corporate Systems Group.

The philosophy in many large shops for the 1990s appears to translate "Let the application dictate the platform but do not throw out what already exists."

This viewpoint may be em-

braced out of necessity by users unwilling to take risks with what passes for open systems today.

"I wish that the sellers of open systems would get their act together and deliver usable products rather than get my appetite all ready for futures," Moore said.

Henry Hamilton, senior vice president in charge of IS services at Shearson Lehman Brothers, Inc., is working on all fronts.

"We're bringing users closer to technology with cooperative processing and LAN servers. It's a matter of where the technology is best suited," he said.

Stephen Joselyn, a senior an-

alyst at International Data Corp. in Framingham, Mass., said preliminary forecasts point to a 3% growth in mainframe revenue this year.

"Last year's year turned out to be a worse year than we thought for mainframes" because IBM was not shipping their new models, Joselyn said. "If one year is down, it's easier to get growth the next year. And the economy and [information technology]

spending will be up slightly in 1992." (See story above.) Additionally, Amstel Corp. and Hitachi Data Systems Corp. will ship their high-end mainframe families during 1992, adding fuel to



Prutzman may buy a used S- or J-class model

# String of delays stalls Windows 3.1

CONTINUED FROM PAGE 1

mation systems strategies. "We've got several sites waiting to move over to Windows, but they've held back because Version 3.1 is always just around the corner, and it's supposed to be quicker and better than what's out there now," said Steve Birgfeld, a manager of computing standards at Martin Marietta Corp.'s IS group in Chantilly, Va. Birgfeld has worked with several beta-test versions of the impending update. Even so, he said, he has heard no "official reason" why 3.1 has not shipped yet, and "that's a bit puzzling."

Early delays in Version 3.1 were attributed to both difficulties with the new TrueType option font technology and bugs in the shell of the interface, according to Jesse Berst, publisher of the "Windows Watcher" newsletter in Redmond, Wash. These have since been ironed out.

Another beta-test version contained problems with certain Version 3.0 components such as memory managers and was reportedly incompatible with DOS extender applications adhering to the DOS Protected Mode standard. Cameron Myhrvold,

manager of Microsoft's developer relations group, said he expects that problem to be cleared up by the time Version 3.1 is released.

The delay in the arrival of Windows 3.1 has also proven irritating for developers who are writing pen-based applications based on the Windows for Pen Computing platform, which will be an integral part of the 3.1 update. "We wish PenWindows was ready because we're ready to ship [applications]. This is the first time applications are ready before the hardware or OS software is," said Vern Rayburn, chairman of Slate Corp. in Scottsdale, Ariz.

## The waiting game

Some observers suggested that 3.1 is ready but that Microsoft is waiting for developers to build up a suite of applications optimized for the revamped environment.

At a Windows 3.1 software developers conference in August, Microsoft officials offered a sneak peek at the update. It included a series of built-in diagnostic checks and balances that

Microsoft hoped will lure developers into aggressively building new applications for it.

"Microsoft is at the mercy of 3,500 commercial developers," said Joel Diamond, technical director of the Windows User Group Network in Media, Pa.

"It takes a minimum of six months of developing and compatibility testing when you're dealing with pen-based [application programming interfaces] and test specifications. A solid environment will also reduce technical support. No one wants to give money away to the post office for update diskettes," Diamond added.

Observers said Microsoft is going to great lengths to ensure that the upgrade is as bulletproof as possible when it ships later this year. Windows 3.1 is now at 10,000 beta-test sites, surpassing even the mammoth beta-test program of DOS 5.0.

Microsoft has also acknowledged that many of the problems users have today with setup and memory management can be avoided through better Windows documentation and installation programs.

Customers had to meet certain requirements to receive this release, including a commitment to implement the full-blown Release 2.0. Customers were also required to indicate they needed the software for a production application and to prove they had the necessary technical support in-house to handle it.

## In beta works

Royal Bank said it had been planning to install this release because it had scheduled delivery of applications to its users based on the year-end availability date for Release 2.0.

Royal Bank's Oliver said he had been working closely with IBM over the past two weeks to "make sure it had the kinks out."

Curry Seril, manager of applied technology at Huntington National Bank, said he elected not to take the limited-availability version because "we were not quite in the crunch that some other people were, so we didn't really need it."

# Users must look 'within' for enhancements to Windows

BY JAMES DALY  
OF STAFF

While the arrival date of Windows 3.1 remains hazy, some of the improvements are certain. But "most of the enhancements are internal," according to beta tester John Stitt, office automation manager at Pacific First Bank in Seattle. These include the following:

- Dr. Watson, a set of diagnostic tools designed to pinpoint the source of the persistent Unrecoverable Application Error crashes that have plagued many Microsoft Corp. Windows 3.0 software packages.
- TrueType, which has been jointly developed by Microsoft and Apple Computer, Inc., will be incorporated directly into the Windows Graphics Device Interface. TrueType will allow users to scale, rotate and otherwise

manipulate fonts.

• Support for the pen-based Windows for Pen Computing package, as well as a feature called Common Dialogs, which contains a set of commonly used dialog boxes that developers can pop in their applications, and an improved help facility.

• Enhanced multitasking.

• New application programming interfaces.

• A new file manager that lets the user split the screen vertically to show a directory tree on the left and files in the selected directory on the right. The program manager will also let the user specify a set of "start-up" applications that will automatically be available in an icon form.

• Greater application integration, including Dynamic Data Exchange, Object Linking and Embedding and drag-and-drop features.

# Hewlett-Packard succeeds in shipping under \$5,000

CONTINUED FROM PAGE 1

"That's quite awesome for that price range," observed an analyst who intended to brief the briefcase. A similarly priced workstation from Sun Microsystems, Inc., for example, runs at 20.1 Specmarks.

The HP offering will undoubtedly shake the trons at Sun and Digital Equipment Corp. Both vendors have similarly low-priced systems in the \$5,000 range, but they run at significantly lower performance levels than the HP system will deliver, analysts noted.

Closer to the \$10,000 mark, HP will also announce the Model 710 Basestation, a high-performance workstation available in both color and gray-scale versions, sources said. HP will also introduce improved three-dimensional solid modeling products, which are integrated with the Precision Architecture RISC chip. Users of current Series 700 workstations can upgrade their systems with the 3-D graphics boards.

"HP has done a good job. You have to give them credit," said Duane Elm, a program manager in technical computing at General Electric Co. in Bridgeport, Conn. "Two years ago, I wouldn't have put a dime in their stock, and now they're very impressive."

The appearance of an HP workstation at less than \$5,000 is surprising in light of remarks a company vice president made last month after DEC's low-end workstation announcement.

Lewis Platt, an HP executive vice president and head of the computer systems organization, said his company would not reach as low as \$4,000 to \$5,000 with its upcoming low-end models. Apparently what has changed is HP's ability to deliver the Model 705 earlier than expected, sources close to the company said. "Customers have been asking for it, so the strategy didn't change. The timing did," the source said.

## Competitive partners

Analysts noted how the addition of competitively priced low-end machines to the Precision Architecture RISC line gives HP a binary-compatible reach from the desktop to mainframe-class systems—an attractive lure for corporate accounts.

"HP has clearly recognized that while the high end is an interesting place to be, they can see the way the workstation business is going," said Laura Condon, an analyst at Production Sciences Research in New York. She pointed to HP's success in the Model 720, its current low-end workstation with a base price of about \$12,000 for 59.5 Specmarks.

In the past, HP has been excluded from such accounts because of its segmented product line, which includes its own proprietary MPFS architecture, the Series 400 workstations based on Motorola, Inc.'s 68040 chip, and the Precision Architecture RISC products.

# IBM struggles, hits target

CONTINUED FROM PAGE 1

October 1991 for delivery by year's end, was provided electrically to about 350 accounts worldwide, said Tommy Steele, director of the IBM Personal Systems Programming Laboratory in Boca Raton, Fla. He said IBM will begin delivering a shrink-wrapped version of the release by midmonth.

IBM had plenty riding on this shipment. Last October, the company promised a limited-availability version by year's end and after postponing the full-blown Release 2.0 to March.

The limited-availability version includes everything IBM promised users at an April 05/2 conference. The March release will include changes suggested by beta testers.

"It was an important date," said Bill Higgs, vice president of software research at Computer Intelligence/Infocorp. "If they

had not shipped this part by the end of the year, there would have been a major credibility gap."

Higgs added that this shipment does not guarantee that IBM will deliver the complete Release 2.0 on schedule in March, but "it gives you a more comfortable feeling."

The limited availability version is stabilized code with essentially the same functionality as the existing Release 2.0 beta code. It does not have the extensive support of Microsoft Corp. Windows applications, nor does it support a 32-bit graphics engine. Both functions have been promised for the full-blown version of 2.0, now scheduled for a March shipment.

IBM's Steele said the company received orders from about 350 accounts worldwide for the limited availability version.

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## MM-Pick

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base de datos (Spanish)  
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reper (French)

## CIO's Top 10 concerns in 1992

According to N. Dean Meyer, president of NDMA, Inc., a consulting firm in Ridgefield, Conn., the important issues for CIOs in '92 will revolve around the organizational structure of IS, internal economics and business practices:

1. Set budgets based on business need, not politics.
2. Involve clients in priority-setting processes that ensure alignment with the business.
3. Bring entrepreneurship and customer focus to the IS culture.
4. Provide a range of technical specialists without adding head count by using contractors.
5. Build high-performance teamwork between various IS specialists.
6. Measure the strategic benefit of IS in quantitative terms.
7. Look for high-payoff, quick-hit opportunities instead of large, complex projects.
8. Conduct architecture planning as an ongoing process.
9. Consolidate operations to reduce costs.
10. Develop collaborative relationships with decentralized IS groups throughout the company.

► Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola or Jodie Nazzari at (800) 343-6474. If we use your ideas, we'll send you a gift.

## PLAY IT AGAIN, RAM

Having problems finding those computer-generated tunes you've been yearning for? Search no longer; there's a catalog, called *Aftertouch: Electronic Music Discoveries*, filled with jazz, rock, easy listening and new age music, all done with keyboards — computer, that is. Titles include "Console Cowboy," "Technocrat," "Mac & Me" and "Terminal Insecurity." Catalog published by the Computer Musician Coalition in Peoria, Ill.

## INSIDE LINES

### Sharpening the blade

► A lesser, messier Lotus is beginning to take shape as the company starts implementing the 300- to 400-person layoffs announced last month. As expected, marketing will take a substantial hit — particularly staff/planning functions, according to Robert K. Weiler, department head. The downsizing will "prune a seriously overgrown department," he said.

### Faults not tolerated

► Stratus Computer and Hewlett-Packard are reportedly engaged in discussions about a partnership whereby HP would resell Stratus' line of fault-tolerant computers. While the Stratus response was "no comment," and HP could not be reached by press time, such a liaison could pose an interesting situation, as HP currently markets Sequoia Systems' fault-tolerant systems. HP is said to be unhappy with the way the Sequoia agreement is evolving.

### Black and Blue?

► IBM is apparently going all out to prove it has changed its ways in the world of portables. Sources say its new line of portables will be in black casing, a distinct move away from the beige coloring the company has had before. "Beige is not a good color for portable

computing anyhow," one source said. "It gets dirty." One source reports that the move to a new color has sparked an internal debate at IBM, and there is a chance that the company will decide the new look is too different and dump it.

### But is he happy?

► Last week's uptick in the price of Microsoft's stock, bringing it to a 12-month high of \$114 a share, made Chairman Bill Gates the richest man in America, industry analysts estimate. The 36-year-old entrepreneur is said to be worth approximately \$6.5 billion, earning him the No. 1 spot previously held by Wal-Mart Stores head Sam Walton.

### Who's on top?

► Underground-Bios and Network seem to have their signals crossed about exactly how big a piece of the LAN hub vendor UB has bought. A Network spokesman said 50%; a UB spokesman claimed 50.1%. That 0.1% may be small, but it does make a slight difference in terms of UB's having a controlling interest in a company that is, among other things, giving Novell a run for its money in the Netware management arena.

### When splitting is good news

► Novell is rumored to be preparing to split its stock now that it has vaulted above \$60 a share. The darling of Wall Street is gaining ground even compared with

the recent record-breaking run-up on the stock market. Novell denies any plans to split its stock in the near future — the next two weeks, that is. No promises after that, a spokesperson said.

### Putting pen to screen

► IBM's collaborative efforts with Go Corp. will yield a tablet machine that will sport a pen-based version of IBM's Presentation Manager. Data can be entered via a stylus, and overlapping documents can be moved around the screen by dragging them with a fingertip. The machine will also offer voice annotation capabilities. Chairman Michael Dell says Dell Computer also plans a product using pen-input technology by next year.

*Prodigy users trying to log on to the on-line system may have had some problems getting through to their local access members over the holidays. According to a Prodigy spokesman, however, the Christmas season made things " hectic," as scores of new users, eager to try out Prodigy software received as a gift, spent hours on the system familiarizing themselves with it. The result was that regular users found it difficult to get through. Things should return to normal after the holiday season, however, the spokesman said. Things are back to normal for News Editor Alan Alper — he's looking for news tips. Phone him at (800) 343-6474, fax him at (508) 875-8931, or CompuServe him at 76537.2413.*

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